ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

Welded Steel Penstocks at Hungry Horse Dam

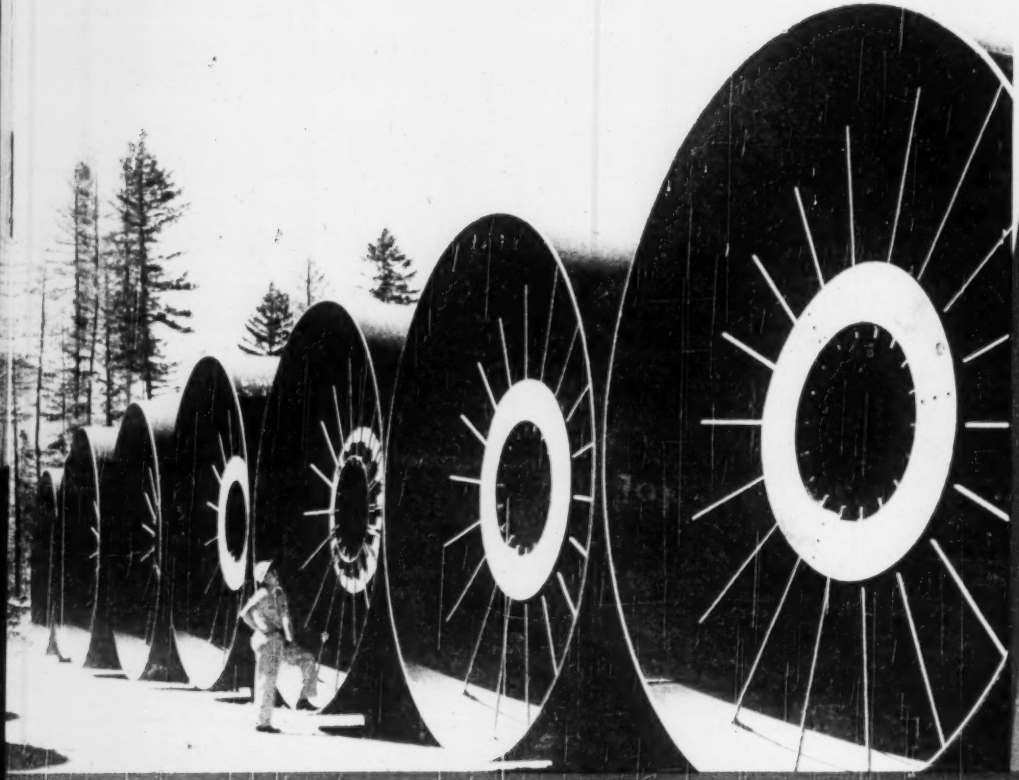
Four welded steel penstocks, each 115 ft. long, will deliver water to the 105,000-hp turbines in the power house at the Hungry Horse dam in Northwest Montana. We fabricated the steel for these penstocks in our shops at Salt Lake City and welded it into sections 20 ft. long at the dam site. The view below shows some of the sections in a storage yard ready for delivery to the dam.

The four penstocks are made of plate ranging from ⅜ in. to 1 in. in thickness. They are 18 ft. 6 in. in diam at the upper end and 11 ft. 9 in. in diam at the lower end. Constructing them in sections required approximately 8,100 lineal feet of automatic machine welding and 1,300 ft. of hand welding. Installation of these penstock sections at the dam will require an additional 1,000 feet of hand welded seam.

The internal "spiders" are used to retain the circular shape of the penstock sections during handling and while concrete is being poured around them. After the concrete sets, the spiders will be removed.

The penstock installation at the Hungry Horse project illustrates how well we are equipped to handle steel plate work for construction projects. We also fabricate and erect plain and differential surge tanks, smokestacks, large-diameter pipe, flat-bottom reservoirs, elevated water tanks, and similar steel plate structures. Let our nearest office furnish estimates for your next job.

The name "Hungry Horse" comes, we are told, from a story about two run away horses that spent the winter of 1900-1 in this area and were found in an almost starved condition. The statuette below is rapidly becoming known as a symbol for the project.



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HENRY DOELGER PICKS LPC MOTOR SCRAPERS

for 12 million yds.!

MOVING 12 million yards of sand is a man-sized job in anyone's language. Henry Doelger of San Francisco tackled it to make room for a 7000 new home housing project at Westlake, south of San Francisco. Six LaPlant-Choate Motor Scrapers are moving 11,700 yards per 8-hour day, working on a 1600-ft. cycle. Each load averages 14.3 pay yards. Material is damp sand, weighing 3000 lbs. to the yard. Average loading time is 1-minute. All ejection and spreading is done in high gear. Each unit hauls 17 loads in a 50-min. hr.

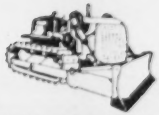
Whether you're moving sand, mud or good scraper dirt, you'll be money ahead if you use profit-making LPC Motor Scrapers. Get the story *first* hand — talk to the men who own them or run them. There are reasons why more and more smart contractors are using the Motor Scraper.

Available now in 2 sizes. The "500" in the 14-17.5 yard class. The "200" in the 9-12 yard class. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa; LaPlant-Choate Sales & Service, 1022 77th Ave., Oakland, Calif.

LAPLANT CHOATE

Cable-operated Scrapers in 6-, 8- and 14-yd. sizes for all makes of track-type tractors.

2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.



Hydraulic and Cable-operated Dozers

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STEVENS
HYDROGRAPHIC INSTRUMENTS

A wide range of precision measuring instruments to record and indicate head, flow, and totalize flow; for waterworks, sewerage, irrigation and industrial uses. New, low cost methods of liquid level recording.

These methods and instruments for all liquid measuring problems are listed in a complete Engineer's Data folder for your convenience. This information folder is *FREE* and can be had by filling in the coupon below. The folder includes data on instruments to record fluctuations of liquids in oil production, stream gaging, deep wells, sewage, irrigation, etc., both accurately and economically.

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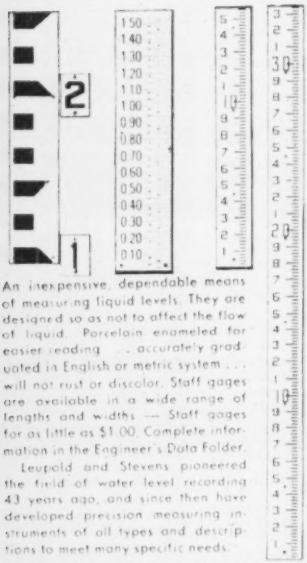

An inexpensive, dependable means of measuring liquid levels. They are designed so as not to affect the flow of liquid. Porcelain enameled for easier reading . . . accurately graduated in English or metric system . . . will not rust or discolor. Staff gages are available in a wide range of lengths and widths — Staff gages for as little as $1.00. Complete information in the Engineer's Data Folder.

Leupold and Stevens pioneered the field of water level recording 43 years ago, and since then have developed precision measuring instruments of all types and descriptions to meet many specific needs.

Write for the complete file. There may be a measuring device that exactly suits your specific requirements. Use the coupon below.

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ENGINEERING NEWS-RECORD

Volume 144 — JUNE 29, 1950 — No. 26

WALDO G. BOWMAN
Editor

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Easily moved from job to job!

No wasted time!

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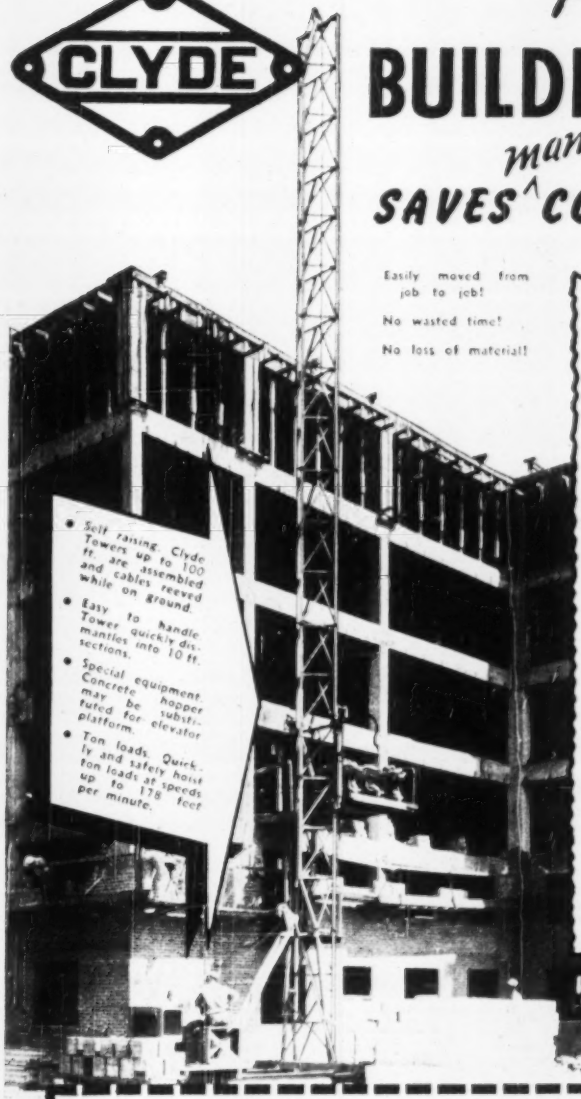

- Self raising. Clyde Towers up to 100 ft. are assembled and cables reeved while on ground.
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- Special equipment. Concrete hopper may be substituted for elevator platform.
- Ton loads. Quickly and safely hoist ton loads at speeds up to 178 feet per minute.

Cut Costs!

Speed Materials Handling!

*Clyde Portable Builders Towers offer many money-saving and time-saving advantages. Time saved in the erection and dismantling, as compared to other type elevators, effects large savings **measurable in cold cash!** Clyde Towers are built for long life, dependable performance, and eliminate maintenance and replacement costs of timber tower. But more than that, Clyde Portable Builders Tower are **safety engineered** to minimize construction job hazards. No acrobats or dare-devils are needed to erect a Clyde . . . it's assembled on the ground and raised into position with its own hoist!

For safety, for convenience, for large savings measurable in cold cash, get a Clyde! **You can expect** AND GET more when you buy a Clyde portable builders tower.

Check these Clyde Features

- ✓ Safety brake automatically locks load in in case of cable failure.
- ✓ A 2,000 lb. capacity tower derrick available as extra equipment.
- ✓ May be transported on trailer wheels or loaded on a truck.

For Complete Facts write for Bulletin A-11

Tower hoist quickly and easily raises tower into position. No outside crane is needed. Clyde Portable Builders Towers are fast, safe, convenient to erect.

Tower is quickly and easily assembled, and cable reeved while tower is on ground. Only two men are required to handle and erect complete.

Tower is easily and quickly lowered and dismantled for transport. May be loaded on truck or towed on trailer wheels which attach to tower base.

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Hoists • Derricks • Whirleys • Builders Towers • Car Pullers • Handi-Cranes • Rollers •

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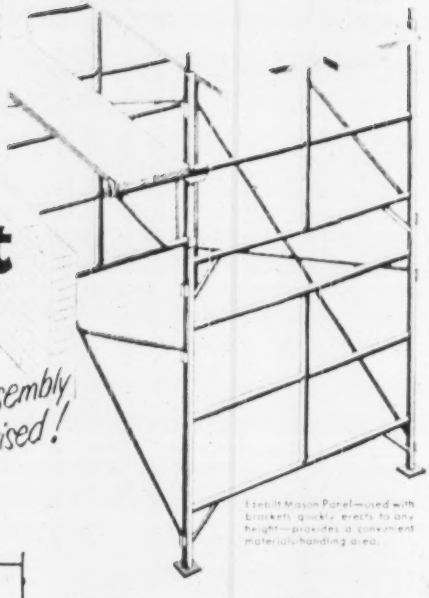
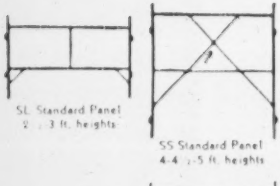
The Fastest SCAFFOLDING assembly ever devised!

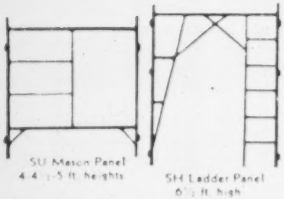


Ezebilt Mason Panel—used with brackets, quickly erects to any height—provides a convenient materials handling area.



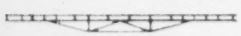
SL Standard Panel
2', 3 ft. heights

SS Standard Panel
4-4½-5 ft. heights



SU Mason Panel
4-4½-5 ft. heights

SH Ladder Panel
6½ ft. high



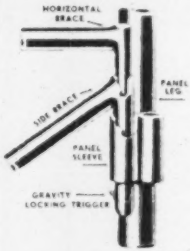
PSW Putlogs—up to
8'2¼ ft. span

Above are sketched just a few of the many basic Ezebilt parts, all interchangeable or all assembled with no bolts, no wing nuts, no loose parts.

"Up Faster—no bolts to master"

To erect a scaffolding without losing time working with or looking for loose parts—specify Universal Ezebilt. Everything necessary for assembling the different panels, stringers, and braces is contained right in the "Gravity Lock" . . . just put the units into position and the scaffolding virtually assembles itself.

Note in the Diagram how easy and fast an Ezebilt installation can be made. In the simple "Gravity Lock" design, the side braces and horizontal braces are attached to the panel legs . . . no nuts, bolts, or tools required.



Send for name of nearest distributor—or write for new Ezebilt Catalog

UNIVERSAL MANUFACTURING CORP.
200 NORTH STREET · ZELIENOPLE Pgh. District PA.

ESTEEL Tubular Steel Panel Scaffolding, LADISH All-Lightweight Scaffolding, Elevating Towers, Rolling Maintenance Towers, Patrol-ee Steel Erectors, Agricultural Equipment, Drop Clamp Type Scaffolding.

NEWS BRIEFS

Like Depression Days—Columbia Steel Co.'s Torrance, Cal., plant will complete installation of the industry's first smoke and fume elimination device for open hearth furnaces by Oct. 31. About $600,000 worth of electrostatic precipitators will be installed. They'll pass gases through discharge flues, cooling them from 1,500 to 500 deg. F., and precipitate the solids.

Sunlight's at Fault—Pennsylvania's Health Department reports what it calls a valuable research tool. It's found that as much as 1,000 ppm of cyanide in water will have no adverse effect upon fish until the cyanide is exposed to sunlight. Thereafter, one ppm will kill the fish within an hour.

Add Union Rules—Virginia's issued some instructions to the crews that paint and replace the white lines dividing traffic. It's forbidden on holidays, week ends and near large gatherings; discontinued at peak hours; done on clear days to speed drying; and done in sections on long grades.

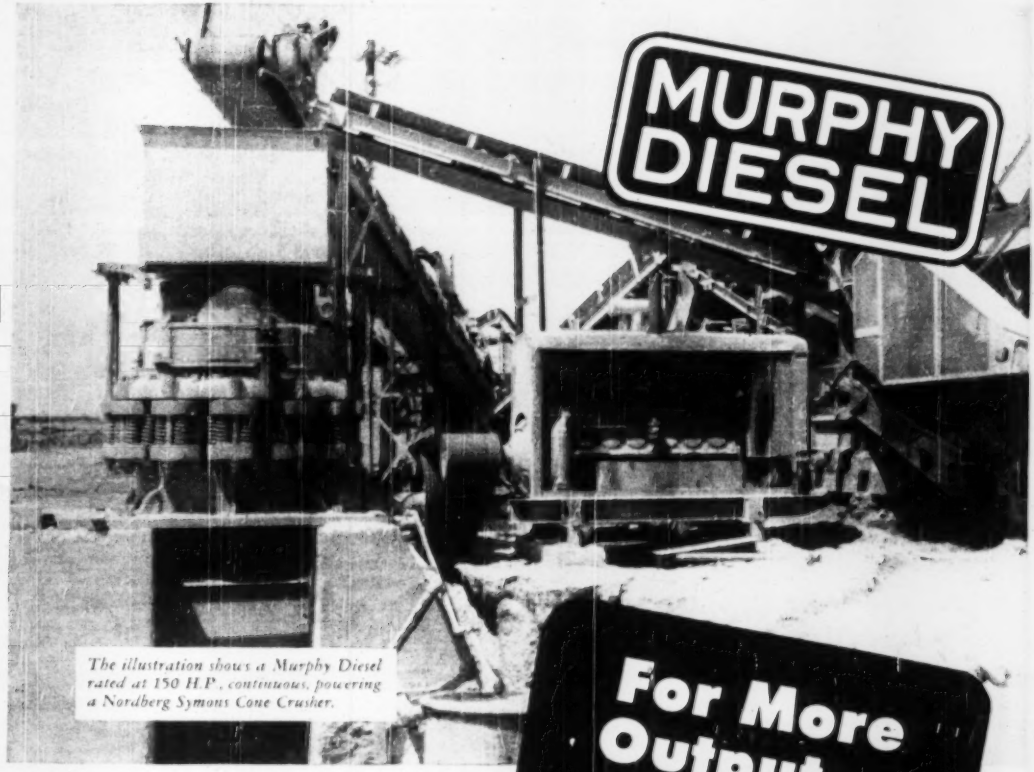
Construction Cost Note—With construction just begun on its $8,000,000 Alaskan Way viaduct, Seattle finds it has spent almost $1,000,000 on condemnation costs. The condemnation was the largest in the city's history, raised some legal points unique there. Many concerned the effect and cost of impairment of "light, air and access."

Important Election—Akron, Ohio, voters will have a part in one of the nation's most significant senatorial elections this fall, wherein Sen. Taft stands for reelection. Adding interest may be a $15,000,000 bond issue. It would be in connection with a $17,000,000 school construction program now being planned by the Akron Board of Education.

"Out-of-the-Mud" Stuff—South Carolina's Highway Commission has adopted a $2,500,000 farm-to-market road paving program for 1950-51. This amount brings to $29,500,000 the funds directed by the state to rural and suburban roads since the war.

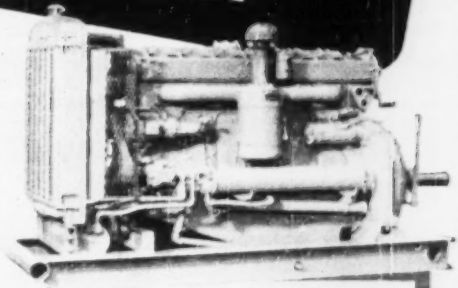
Rules, Rules, Rules—A fifth Pennsylvania industry now has a set of standards under which to operate in treating its wastes. It's the pulp and paper industry. Earlier sets of regulations covered milk, oil well, gas well and steel mill pickling liquor waste treat-

(Continued on page 6)



The illustration shows a Murphy Diesel rated at 150 H.P., continuous, powering a Nordberg Symons Cone Crusher.

For More Output... At Lower Cost



ANY crushing job will be more profitable when you have economical, dependable power. And that's just what has made Murphy Diesels so popular with crushing plant owners everywhere. The Murphy Diesel is a rugged, heavy duty power plant built to deliver its full rated power 24 hours a day, day-in and day-out. It's economical, too — *the Murphy Diesel uses less fuel per horsepower hour than any other engine in its size range.*

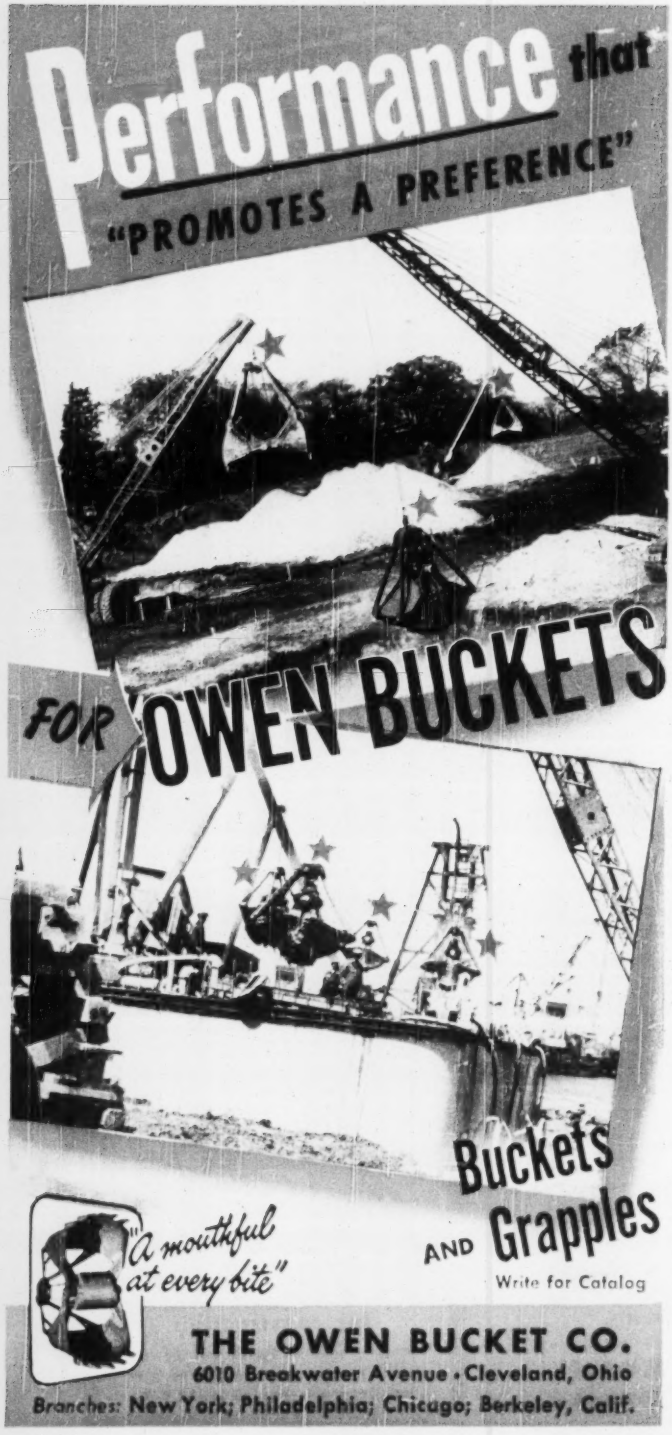
Such engineering features as "true" diesel operation, unit fuel injection, four valves per cylinder, hydraulic servo-type governor and many others are the reasons why Murphy Diesels are able to compile such impressive records. Of particular interest to crushing plant operators are the Murphy features that guard the engine against the destructive effects of dust and dirt — large oil bath air filter, positive filtered crankcase ventilation and full flow absorbent type fuel and lube oil filters . . . extra protection for you under rock crushing conditions.

Get full information on Murphy Diesel. Ask your Murphy Diesel Dealer or write directly.

MURPHY DIESEL COMPANY
5311 W. Burnham St., Milwaukee 14, Wisconsin

Heavy duty power
for construction

Murphy Diesel Engines and Power Units for construction, 90 to 220 H.P. Generator Sets, 60 to 133 K.W.



(Continued from page 4)

ments. Standards were prepared by the Health Department and a committee representing the industry.

No Free Ride—Connecticut law now provides that city housing authorities reimburse the state for work done by the state authority. That will eliminate all cost to the state of a program for which the state takes considerable credit.

Believe It or Not—A Texas company has just completed a loan so large that it had to go all the way to Pennsylvania and New Jersey to raise the money. Lone Star Gas Co., of Dallas, borrowed $85,000,000 from three Fort Worth, five Dallas and three Pittsburgh banks and the Prudential Insurance Co. The latter loaned $65,000,000 of it. The money's for a five-year expansion program which will call for new gasoline recovery, development and exploration programs and an expanded distribution system. It's described as the Southwest's largest single financial transaction.

No Drouth Now—San Francisco has completed a second pipeline to bring Hetch Hetchy water to the city. The 35-mi, $8,500,000, steel and concrete line adds 20 mgd to the city's supply, an increase of one third in the mountain water flow. Other water is available from springs around the city.

Big Job—Illinois faces a 10-year job to correct its highway deficiencies, a Congressional committee found. Only California and Ohio have bigger road rehabilitation jobs, the report asserted. Almost 65,000 of the 87,759 mi of roadway were classed as deficient.

Money Trouble—Army Engineers and the city of Los Angeles are squabbling over division of costs on the proposed $25,000,000 yacht harbor at Playa del Rey beach. City proposes to pay $16,505,000. The Army says $10,427,000 is about right. The Board of Engineers for Rivers and Harbors also says no agreement exists between city and county on control of the harbor after it's done.

Careful, Please—Publicity for the New York State Thruway asks motorists to "be careful of its surveyors, who'll be necessary for the 430 mi road between New York City and Buffalo. State has less than 2,000 at them, according to the Public Works Department. It costs $5,000 to train them and their experience is even more valuable.

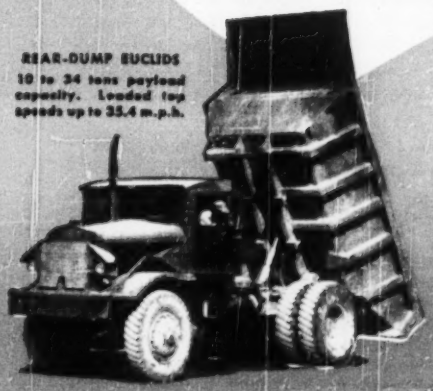
Which is a Revenue Bond?—Kentucky

(Continued on page 12)

OVER 60% OF ALL EUCLIDS SOLD ARE REPEAT ORDERS . . .

PROOF of CUSTOMER SATISFACTION . . . . . PROFITABLE PERFORMANCE !

BOTTOM-DUMP EUCLIDS
13 to 25 cu. yd. capacity. Top speeds loaded up to 34.4 m.p.h.



REAR-DUMP EUCLIDS
10 to 34 tons payload capacity. Loaded top speeds up to 35.4 m.p.h.

Leading contractors and industrial users buy "Eucs" because they are designed and built throughout for heavy off-the-highway hauling. And because Euclids are job proved for high production at the lowest cost per ton or yard moved, owners add to their fleets as more equipment is needed.

Nine out of every 11 Euclids built are still in use today. Their ability to stay on the job year after year under a wide range of operating conditions means more yards moved at greater profit.

Euclid owners also know they can depend on prompt, efficient service from Euclid's world-wide distributor organization.

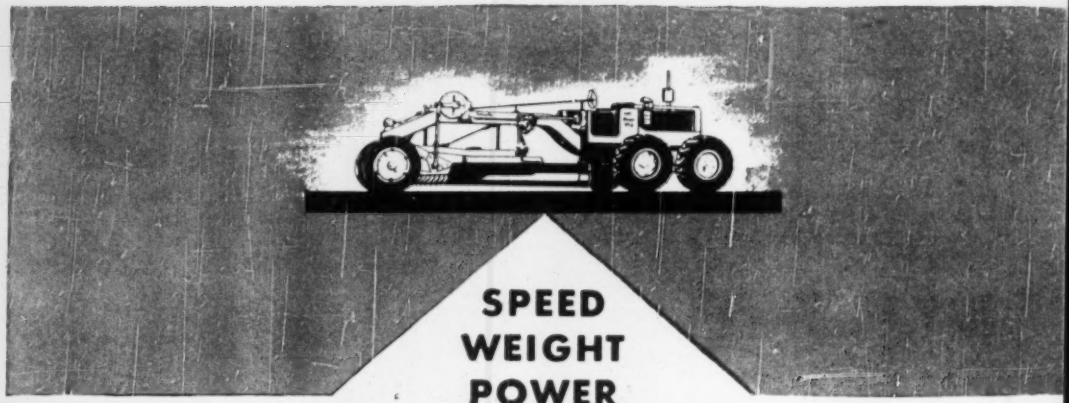
Write for information on the complete line of Euclid equipment or see your Euclid Distributor today.

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio
CABLE ADDRESS: YUKLID—CODE: BENTLEY

EUCLIDS *Move the Earth*

Buy balanced

FOR MORE WORK

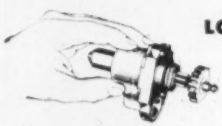


THE OWNER of the "Cat" No. 212 Grader shown here has a unique problem. "Can't keep operators away from the rig," says D. W. Klock, vice president of the Klock Construction Company, Amarillo, Texas. "This Motor Grader is so fast, maneuverable and well balanced, the boys *all* want to run it!"

Balance is the secret of "Cat" Graders' popularity with owner and operator alike. "Caterpillar" builds each Motor Grader from the ground up as an individual unit. The correct weight, plus the right horsepower, plus rated work speed—these things add up to *balanced* machines that solve your job problems at lower cost.

Informed buyers are finding that *assembled* motor graders are often poorly balanced. It stands to reason that when one engine or one frame is used for more than one model, the best use cannot be made of weight and power. But balanced "Cat" rigs are neither muscle-bound nor jumpy on the job. Their matching power cuts costs through superior performance and longer service life.

There's a size "Cat" Motor Grader for every type of work—with the stamina, punch and balance to do a particular job best. And don't forget what world-famous "Caterpillar" dealer service means in keeping equipment on the job—cutting down-time to the bone. Ask your "Caterpillar" dealer to show you his Motor Graders' bonus features—from tough blades with the maneuverability of a boarding-house reach, to "Hi-Electro" hardened final drive gears built to last.



LOOK UNDER THE HIDE

Fuel pumps are "Caterpillar"-designed and "Caterpillar"-built. Made of the cleanest high-chromium, high-carbon alloy steel obtainable, the pump plungers and barrels are diamond lapped. Pumps are heat-treated to maximum hardness to give users thousands of hours of trouble-free economical service. There is an individual pump for each cylinder. Pumps are adjustment-free and completely interchangeable. Look under the hide for quality—it doesn't show on the outside, it shows up in performance.

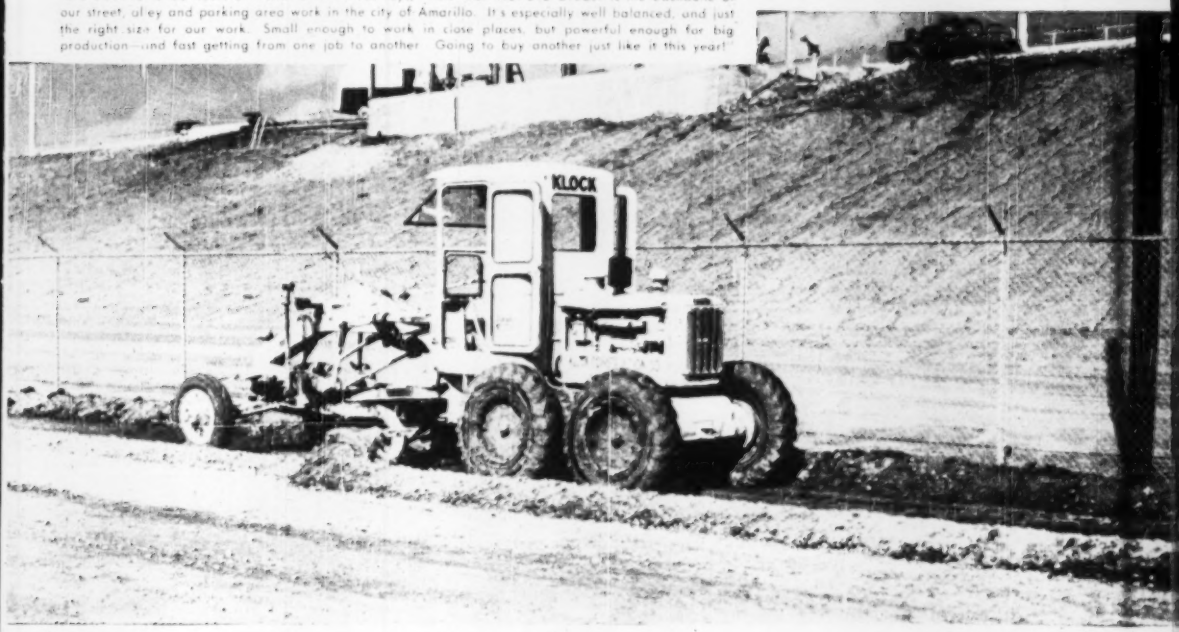
CATERPILLAR

REG. U. S. PAT. OFF.

"Cat" graders

AT LESS COST

Here's the Klock Construction Company's "Cat" No. 212 Grader working on the new municipal football stadium in Amarillo. Does subgrade, shoulder work and drainage. It's punched the Klock Co.'s time clock for 5186 hours of work. D. W. Klock says, "This Cat No. 212 Grader is the backbone of our street, alley and parking area work in the city of Amarillo. It's especially well balanced, and just the right size for our work. Small enough to work in close places, but powerful enough for big production—and fast getting from one job to another. Going to buy another just like it this year!"



NO. 12

WEIGHT	22,300 lbs.
ENGINE	100 hp.
SPEEDS: 1st	2.5 mph.
2nd	3.6 "
3rd	5.5 "
4th	8.5 "
5th	12.0 "
6th	16.3 "
1st R	2.7 "
2nd R	4.1 "

In a No. 12 "Cat" Motor Grader you get a No. 12 from stem to gudgeon. The "Cat" Engine was built for a frame that gets full use out of its 100 hp. And the working speed range was engineered to get maximum production at each speed.

Price of the standard model No. 12 is $10,920 f. o. b. Peoria subject to change without notice.

NO. 112

WEIGHT	19,480 lbs.
ENGINE	75 hp.
SPEEDS: 1st	2.1 mph.
2nd	3.1 "
3rd	4.8 "
4th	7.5 "
5th	11.2 "
6th	16.0 "
1st R	2.8 "
2nd R	4.0 "

With the No. 112 you get the No. 112 x 75 hp. Engine on a No. 112 frame, with a No. 112 weight and a No. 112 transmission. You don't get mismatched power, weight or speed.

Price of the standard model No. 112 is $8545 f. o. b. Peoria subject to change without notice.

NO. 212

WEIGHT	tandem drive 13,040 lbs. single drive 11,010
ENGINE	60 hp.
SPEEDS: 1st	2.0 mph.
2nd	3.1 "
3rd	4.5 "
4th	11.9 "
R	2.8 "

When you buy a No. 212 you get the same balanced performance. It has its own weight, its own frame, its own "Cat" Engine, its own working speeds.

Price of the standard model No. 212 is $6615 f. o. b. Peoria subject to change without notice.

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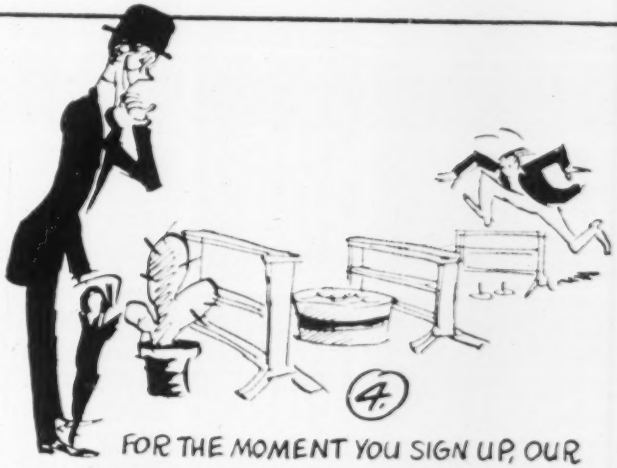

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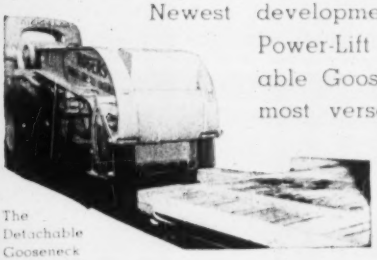

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(Continued from page 6)

counts have a test case which could have wide ramifications. A member of the legislature has sued to stop a state agency from issuing revenue bonds which would be repaid from rentals paid by the state for the use of property built with bond issue proceeds. The suit claims the bonds would commit future legislators to appropriate fixed amounts regularly until bonds were retired.

Wanted: Up-to-date Data. Census Bureau and the Housing and Home Finance Agency will collaborate on a project aimed at providing a continuing, reliable inventory of U.S. housing between censuses. Census will provide tested techniques for classifying its data and for gathering other material.

Knotty Problem. North Carolina's Highway Commission has a report recommending that it give up control of the state's prison system. Biggest fault with prison road camps, the report says, is that "a dollar sign has been placed on the back of every prisoner; the main thought is to get full value from him on the roads."

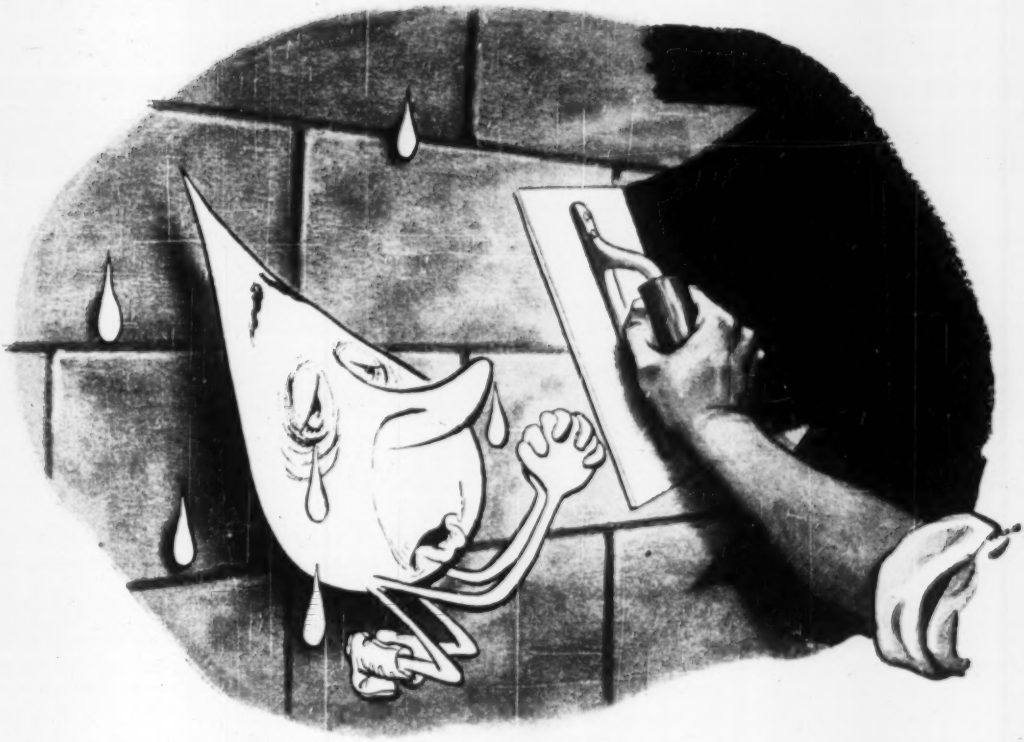
THE COVER

Looking away from the recording tape of a Geiger counter is Prof. Rolf Eliassen, of the Department of Civil and Sanitary Engineering of M.I.T. He's this year's recipient of the George Westinghouse award for distinguished contributions to the teaching of engineering students.

The Geiger counter, incidentally, is part of an M.I.T. investigation into the removal of radioactive substances from water by conventional treatment methods.

The 39-year-old professor, a native of Brooklyn, New York, will be the fifth recipient of the Westinghouse award, made each year by the American Society for Engineering Education (see also the news section of this issue). His career has been active enough for several engineers: A 1932 graduate of M.I.T., he worked for two consulting firms, was an associate professor (sanitary) at Illinois Institute of Technology, held a similar post at New York University, was consultant to the National Resources Planning Board in the early war years and rejoined M.I.T. in 1949.

In addition, he's been a travelling salesman; successively captain, major and lieutenant colonel, Corps of Engineers; head of the Department of Civil Engineering at the American University at Biarritz, France; a pretty good amateur tennis player; a music-lover (but no musician); has written some 40 papers and reports for publication; and carried on a considerable consulting practice.



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Here is a list of specially formulated asphalts for the many different applications necessary in moisture control. Cutbacks and emulsions . . . mastics, semi-mastics and fluids . . . hot-applied, cold-applied . . . fibrated, non-fibrated . . . spray-, brush-, and trowel-applied . . . whatever the characteristics, you can be certain that when you specify Flintkote, you're getting high quality products *especially developed* for your needs.

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BEAM - STRENGTH

Without beam strength—or, for that matter—without all of the strength factors listed opposite—no pipe laid 100 years ago in *city streets* would be in service today. But, in spite of the evolution of traffic from horse-drawn vehicles to heavy trucks and buses—and today's vast complexity of subway and underground utility services—cast iron gas and water mains, laid over a century ago, are serving in the streets of more than 30 cities in the United States and Canada.

Such service records prove that cast iron pipe combines all the strength factors of long life with ample margins of safety. No pipe that is provably deficient in any of these strength factors should ever be laid in city streets. Cast Iron Pipe Research Association, Thos. F. Wolfe, Engineer, 122 So. Michigan Ave., Chicago 3.

CAST IRON PIPE

Strength factors of Long Life !

No pipe that is provably deficient in any of these strength factors should ever be laid in city streets

BEAM STRENGTH

When cast iron pipe is subjected to beam stress caused by soil settlement, or disturbance of soil by other utilities, or resting on an obstruction, tests prove that standard 6-inch cast iron pipe in 10-foot span sustains a load of 15,000 lbs.

CRUSHING STRENGTH

The ability of cast iron pipe to withstand external loads imposed by heavy fill and unusual traffic loads is proved by the Ring Compression Test. Standard 6-inch cast iron pipe withstands a crushing weight of more than 14,000 lbs. per foot.

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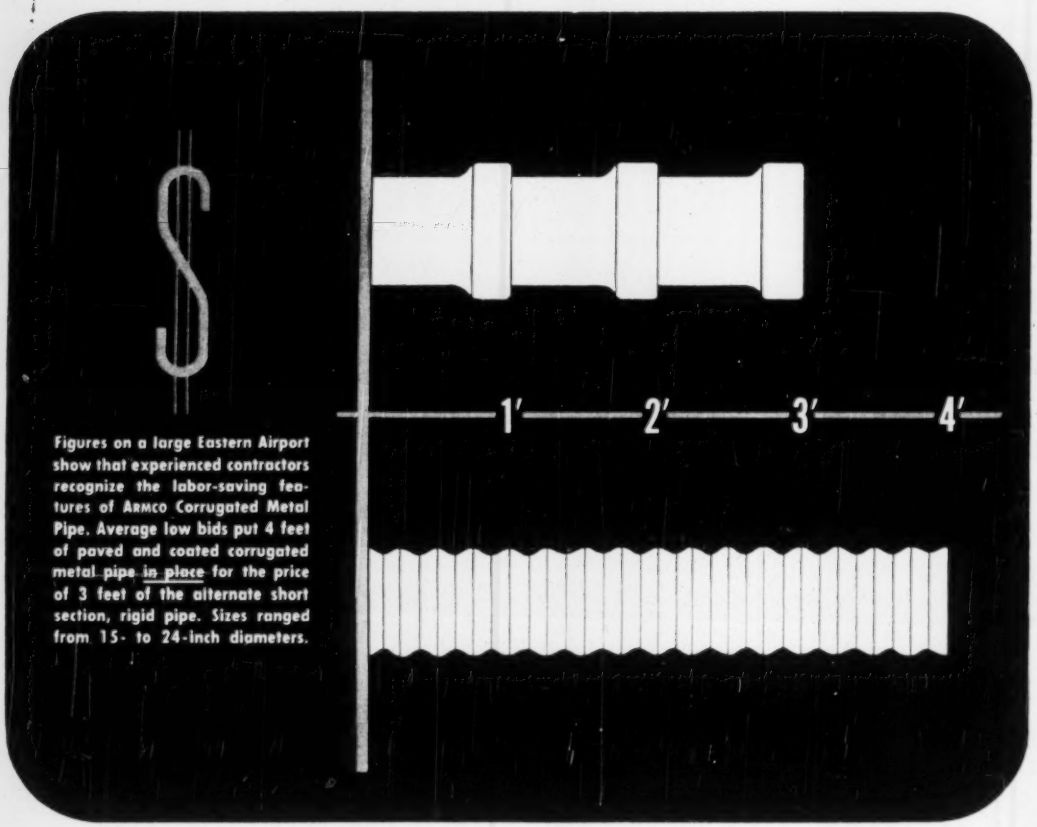
The toughness of cast iron pipe which enables it to withstand impact and traffic shocks, as well as the hazards in handling, is demonstrated by the Impact Test. While under hydrostatic pressure and the heavy blows from a 50 pound hammer, standard 6-inch cast iron pipe does not crack until the hammer is dropped 6 times *on the same spot* from progressively increased heights of 6 inches.

BURSTING STRENGTH

In full length bursting tests standard 6-inch cast iron pipe withstands more than 2500 lbs. per square inch internal hydrostatic pressure, which proves ample ability to resist water-hammer or unusual working pressures.

CAST IRON

SERVES FOR CENTURIES



Figures on a large Eastern Airport show that experienced contractors recognize the labor-saving features of ARMCO Corrugated Metal Pipe. Average low bids put 4 feet of paved and coated corrugated metal pipe in place for the price of 3 feet of the alternate short section, rigid pipe. Sizes ranged from 15- to 24-inch diameters.

Make your bid dollar go 33⅓% farther

Contractors have found that a dollar goes farther when they figure bids with ARMCO Corrugated Metal Pipe. It means lower bids with adequate profits and puts you in a sound competitive position.

Experience shows that ARMCO Pipe saves money in many ways. Although amply strong it often weighs only one-tenth as much as more massive types. This means low handling and hauling costs. Job costs are low because unskilled labor quickly makes the installation. There is no breckage, no curing, no waste, no delay.

Individual sections of ARMCO Pipe or PIPE-ARCH are supplied in any length that can be hauled or handled. No large and expensive equipment is required for installation. A few men with a rope sling or a small A-frame can handle the largest structure. Trenches need only be wide enough for men to work since there are no bells or massive joints that require extra digging. Connections are made with simple band couplers. End finishing is easy and inexpensive with prefabricated ARMCO End Sections.

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ARMCO DRAINAGE STRUCTURES

THE CONSTRUCTION WEEK

TAXES TAKE THE ELEVATOR—House committee ok of a higher tax rate for businesses whose profits exceed $167,000 a year brings some ominous speculation from Washington. Pundits there see it as more than a political maneuver to make palatable at the White House the substantial revenue losses incurred by excise tax cuts. They call it Congress' first accession to the Fair Deal concept that big business should pay more of the government's expenses. Fair Dealers argue that federal spending is underwriting the boom; so, with spending and deficits rising, more of these government-invoked profits should be recovered for government. It's an argument with particular applicability to the construction business. For all business, it may be an indicator of what future Congresses may be willing to accept.

HOW'S YOUR CASH POSITION?—While the corporate tax boost will hit only "big" business if it becomes law, there's another angle to the tax bill which will affect business big and small. It's that Mills Plan again—the proposal to speed up corporate income tax payments as a means of disguising the deficit. (Companies would pay in the first six months after the close of a tax year what they've been paying in the first 12 months.) This, naturally, is no tax increase, but it's a squeeze on those whose cash position is narrow. Because many small companies pay last year's taxes with this year's profits, the Mills plan isn't over-popular. Even so, it may be accepted in the trading that will take place as the Senate gets to work on a tax bill. Numerous senators worry about what a corporate tax boost would do to venture capital. That, however, doesn't worry Fair Dealers. A shortage of private capital, as they see it, could be made up by government capital—through loans and government-backed capital banks. Federal capital, of course, would facilitate federal leadership and direction of business, influencing the shape of business growth and competition.

COLUMBIA RIVER DIVERSION—Californians, particularly state officials, are quick to deny that they had anything to do with prompting studies by the Bureau of Reclamation of diversion of Columbia River water to California (ENR June 25, p 25). The State Water Resources Division maintains that there is ample water in California for its needs—with, however, two provisos: That California rights to Colorado River water are firm and that facilities be constructed for diverting water from coastal rivers in northern California to the central valley.

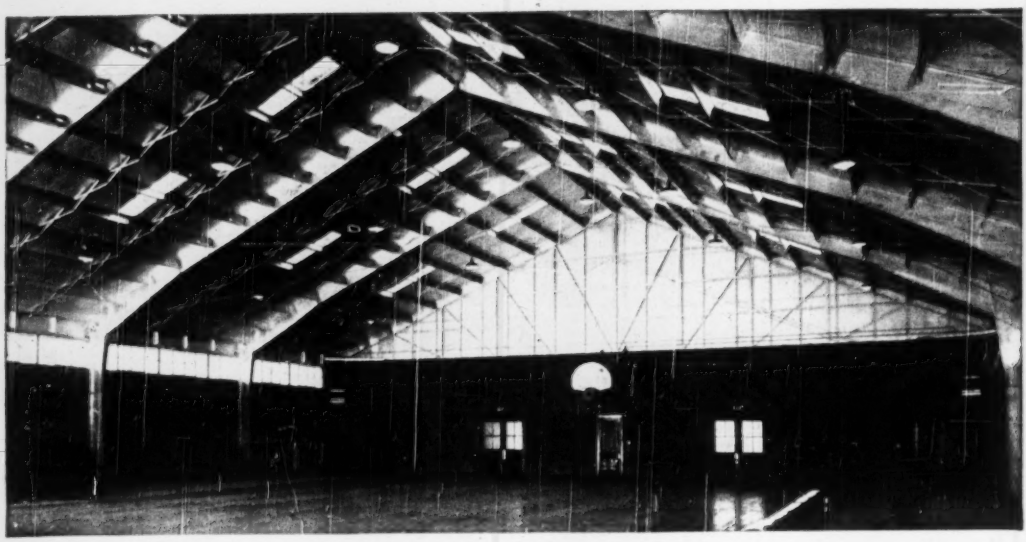
The original Central Valley project plan developed by the state more than 20 years ago included a trans-mountain diversion from the north-coastal Trinity River to the Sacramento Valley. The federal government took over this plan when the state could not finance construction in depression years and this diversion was left out. The state now is drawing up a new statewide "California Water Plan" and special attention is being devoted in studies to use by mountain diversion of the more than 10,000,000 acre-ft per year of water wasted from north coast streams.

HOW ABOUT HOUSING?—Some Washington authorities think May will prove to have been the peak month of the 1950 housing boom. (May recorded 140,000 starts—an all-time, all-season record.) Whether May does or doesn't prove to be the peak, it's agreed that 1950 will break all records—with starts perhaps as many as 200,000 above last year's record of 1,025,000.

HOW'S BUSINESS?—Bureau of Contract Information, an agency of the surety companies, has two interesting indicators as to the current situation in the contracting business. One, backed by statistical evidence, is that surety losses are rising—percentagewise. The ratio of losses to earned premiums is going up, indicating that contractors are having increasing difficulty—for whatever reasons. The other, which can't now be backed up with statistical evidence, is that the volume of notes and bills in the over-due and slow-payment categories seems to be increasing. Evidence available to the bureau indicates that competition—about which contractors have been exclaiming for months—is cutting profit margins.

IT'S ONLY MONEY—The din of that legal battle over the Lustron Corp. apparently hasn't reached from federal court in Columbus, O., to the House Office Building at Washington. A bill has been introduced which would let RFC lend as much as $50,000,000 more to prefab producers and large-scale builders using on-site fabrication methods. Similar proposals in the past haven't done well on Capitol Hill. Too many Congressmen could remember what happened to most of RFC's original $50,000,000 prefab authorization. (It's causing all the noise at Columbus). Major aim of the bill, though, was to authorize chartering of private national mortgage corporations. (ENR May 25, p 25). Idea is that the new corporations would create a private market for FHA and VA paper, replacing the Federal National Mortgage Corp., whose functions have been curtailed.

Welded Design is the Key to Cutting Structural Weight and Cost



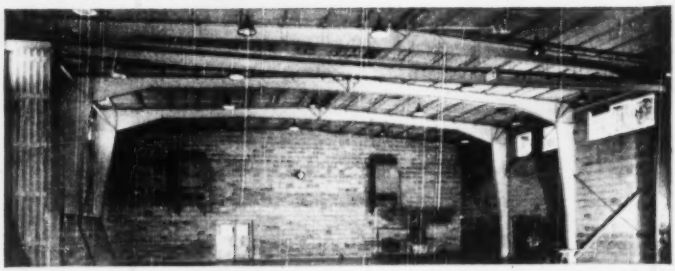
School gymnasium, 82' x 130', at Wright City, Oklahoma. Designed by David R. Graham, Tulsa, Oklahoma. Has clear, unobstructed view from every where. Note simple, compact roof construction.

By DAVID R. GRAHAM
Consulting Engineer
Tulsa, Oklahoma

The limited budgets of small communities for gymnasiums, field houses and similar structures can be met simply through the use of arc welded construction. By designing the framework as a solid, continuous unit, it is possible to use lighter structural members, eliminate rivets, butt and corner plates and so cut steel requirements as much as 50%.

With welded design, the structural engineer can take full advantage of longer spans, greater ceiling clearance and less obstruction than possible with riveted or bolted construction. These benefits, of course, mean higher availability of useful space at lower cost. These buildings are simpler to light and easier to clean.

In the past, our work has been devoted to architectural engineering involving both riveted and welded designs and the decision on riveted or welded design was left up to the engineer. In recent years, however, it is significant to note that clients familiar with both types of structural design now specify welded construction.



School gymnasium, 52' x 130', at Tulsa, Oklahoma. Has exceptional ceiling clearance. Note fan-like formation of roof trusses.

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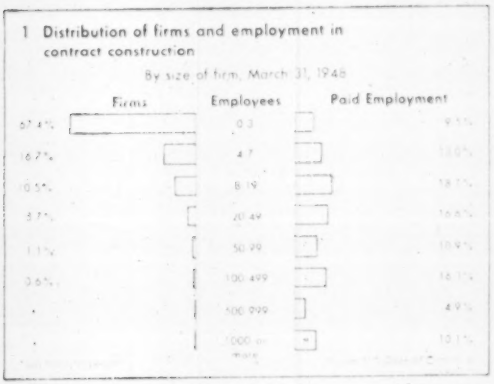
CONSTRUCTION TRENDS

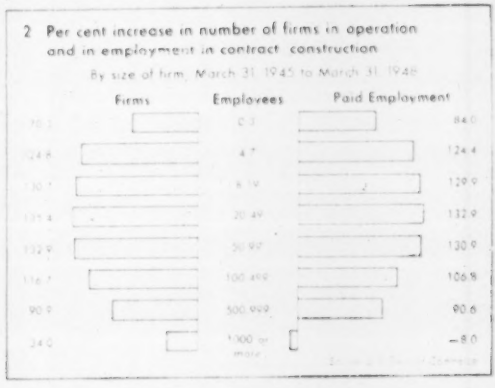
1 Distribution of firms and employment in contract construction

By size of firm, March 31, 1948



2 Per cent increase in number of firms in operation and in employment in contract construction

By size of firm, March 31, 1945 to March 31, 1948



THE CONSTRUCTION BUSINESS GROWS

What's happened to the contract construction business in the booming postwar years is shown in the accompanying charts. Based on a study by the U. S. Department of Commerce, here is a preview of the overall make-up of the industry of a sort that won't be available until there's another Census of Construction.

The employment figures actually understate the size of the industry. The Commerce study is based largely on employment at the end of March of each of the postwar years, a date close to the seasonal low.

The employment figures are based on social security records compiled by the Bureau of Old Age and Survivors Insurance. These include only paid employees. But the Commerce Department adjusted the figures.

The 312,400 contract construction firms who are the employers include trade and subcontractors, plumbing, heating, electrical, painting, plastering as well as general and prime contractors. How many of the total are special trade contractors is not known. But in 1939, when there were 215,050 contract construction firms, 51.9% were special trade contractors, 0.9% "heavy" contractors, 1.7% "highway" contractors (included light waterworks and sewers), 13.8% were building contractors of all sizes and 1.7% were "builders."

So, assuming that the special trade or subcontractors still make up more than 50% of the number of firms, it is no surprise that more than 67% of all the 312,400 "contract construction" firms employ less than four.

On the other hand, the big construction firms do a major part of all construction work. A few big firms employ more than 10% of all construction workers.

Chart I shows the percentage distribution of construction firms and employment by size.

The second striking thing is the industry's amazing growth in the postwar years. True, in March, 1945, when the Commerce figures start, construction was still close to its wartime low. But in the next three years, the total number of contract construction firms grew 85%. This is up 52% from 1939. Employment in the three postwar years climbed 91%. The biggest growth came in the middle-sized firms. In this time, the growth in the number of firms in all industries was only 23%. Employment in all industries gained 8%.

Chart II shows the percentage growth of the industry, by size of firm.

How does construction compare with other business?

The Department's figures for 1948 show there were 3,900,000 operating businesses of all kinds. This includes companies in mining, manufacturing, transportation, trade, utilities, service businesses, and construction. Of these, construction accounted for 312,400. Total employment in all these firms was 33,000,000, an average of slightly less than 10 workers to a firm. Total paid employment in contract construction was slightly more than 2,000,000, or 13.5 workers per firm.

We have only a scattering of clues on development since 1948, which is as far as Commerce carried its study. But these clues indicate continuing growth. The total of operating businesses in contract construction, as reported more recently by the Department of Commerce, was 321,800 last September.

In short, the evidence indicates that the number of firms in the field is still growing, although at a much slower rate than 1946 and 1947. Certainly today's figures on contract awards and volume of activity point to continuing growth in heavy construction work.

And with the shift in homebuilding toward mass housing, and the bright long-range outlook for other kinds of engineering construction, contractors in this field should continue to gain.

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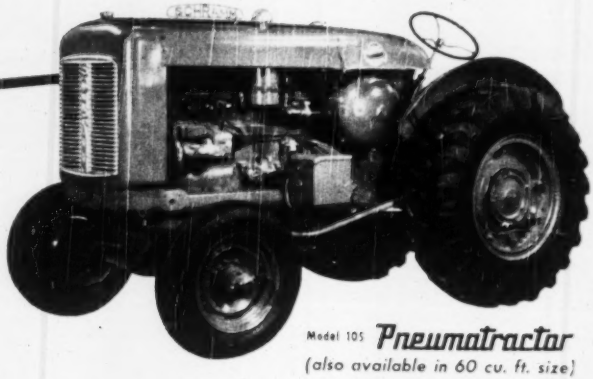

Model 105 ***Pneumatractor***
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The SCHRAMM ***Pneumatractor*** may very aptly be termed the "Newest of the New" —a self-propelled air compressor literally packed with far advanced features that put it in a class by itself. Its desirability over an old model air compressor can be likened to your preference for the modern automobile over the horse and buggy.

Here is why you should choose the SCHRAMM ***Pneumatractor***. It can be easily transported . . . is strong, rugged, husky . . . and costs less than a separate tractor and separate compressor. Moreover, it is so flexible you can use it for an endless variety of compressed air jobs!

Going hand-and-hand with the ***Pneumatractor*** is the complete line of SCHRAMM auxiliary equipment also available . . . approved equipment which will enable you to do your job better.

Write today for Bulletin NEU-50B describing this most modern of air compressors and auxiliary equipment. In today's compressed air needs, you will find the ***Pneumatractor*** a "must".

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Challenging Times for Concrete

In cooperation with the Portland Cement Association with a great new research laboratory, the cement manufacturers of the country have exhibited a high order of industrial statesmanship. In a certain sense every research laboratory is an expression of dissatisfaction with things as they are and a symbol of confidence in what they can become. Despite great advances, concrete and its basic ingredient, cement, do not satisfy all hopes. Despite attainment of a high plateau of knowledge respecting concrete design and manufacture, many peaks holding unknown treasure beckon from the horizon. The cement manufacturers have pledged their support to realize these hopes and to increase this knowledge.

The new laboratory embodies a promise to the public of better concrete, of concrete applied in new and useful ways. By the same token, it ennobles the challenge to the research workers who will labor within its walls to give this promise substance.

There is no dearth of paths for the investigators to follow. By coincidence one of them was suggested in last week's issue only a week after the article describing the laboratory was published (ENR June 15, 1950, p. 821). It relates to the relative advantages of the "old fashioned" coarse cements and the finer ground cements of today. The Kansas highway department has a suspicion that the coarse ground product was discarded too precipitously when the advantages of high early strength furnished by finer grinding caught the country's imagination. Pavement made with both types of cement is being laid for comparison.

The question to be answered is: Are high early strength and durability incompatible characteristics in concrete? Also, is high early strength a deterrent to the best in ultimate strength? Generally a negative answer has been given to both questions. Yet, certain experience of recent years has shown that some pavements made with the coarse cements have continued to gain in strength and durability over a long period of time, whereas the newer concretes, which attained high strength at an early age, have not become appreciably stronger and have shown poor durability with the passage of time. A possible conclusion is that we can accelerate the rate at which concrete hardens, but in so doing we run into gear with the slow process of gel-to-crystal formation that gives concrete the quality that we know as durability.

Thus, cement itself offers one path of investigation. Another, with quite as revolutionary prospects, is offered by prestressed concrete. Here, finally, is a way to make a cement product that will take tension without cracking, one in which the entire cross section, not just the upper half, carries bending moment. So far, the expense of its manufacture seems to make prestressed concrete too expensive for some otherwise promising applications. What can research do to remove this obstacle?

These two paths of needed investigation are merely typical. There are many others: control of air entrainment; reduction of shrinkage; reduction of heat of hydration; lighter weights without strength impairment; more scientific selection and grading of aggregates; more efficient mixing; use of pozzolans, etc.

These are challenging times for concrete, and the appearance on the scene of a new and modern concrete laboratory is most propitious. Not only its own researches but those which its example stimulates can pave the way to new advances in the concrete art.

Highways and Night Clubs

The House Ways and Means Committee has decided to cut the tax on night club bills in half but has consistently refused to cut excise taxes on motor vehicles and parts. The tax on furs, another essential to high living, also is to be cut. But when it comes to cutting one of the federal taxes on highway users—to open the way for the states to add to their highway income without increasing the already heavy tax on road users—Congress takes no action. We surmise that the reason lies in the fact that cutting night club taxes has little effect on the federal income whereas a cut in automotive excise taxes would.

So if you find the highway to your favorite night club going to pieces, or overcrowded with traffic, don't blame the highway department. Just remember that putting up with those conditions is the price Congress asks you to pay for having your evening's pleasure cost you a little less!

Promising New Building Method

Casting floor slabs for the upper stories of a building at ground level and then sliding them up the columns by jacking, as was done on a two-story building at Trinity University (p. 884), is radical but promising. Not only did it prove economical and to the liking of the contractor on this first large-scale use but additional opportunities for improving the technique were uncovered. Once the process is perfected, it should not be too great a step to prestress the concrete slabs and thus decrease their weight. Wider column spacing might also then be practicable. On the test job, the elimination of nearly all formwork and the need for only a small labor force were two advantages of moment. It is good to see new methods tried, particularly if they offer a possibility of cost-saving.

ENGINEERING NEWS-RECORD

JUNE 29, 1950 VOL. 144 NO. 26

NLRB cases define standing of construction disputes

Board continues to make policy and reverse itself after three years under Taft-Hartley — But recent decisions throw some light on jurisdiction problem

Joseph Gambatese
Washington Staff

Where does construction stand under Taft-Hartley?

It's evident, this week, that not even the National Labor Relations Board knows for certain.

After three years, it's still making new policy decisions pertaining to construction.

Already it has reversed itself on some points.

And you can be sure that there'll be more switches as well as more new policy.

• **Why**—There are several reasons for this. Before Taft-Hartley, NLRB hadn't touched construction.

Now it faces a division of opinion on what the law means and how it should be applied. The split exists not only between the board and its independent general counsel, Robert N. Denham. It exists within NLRB itself.

So you can expect that rulings will change with experience, as courts express themselves more fully, as personnel changes take place within the five-member board and in the general counsel's office. One day, the law may change, also.

• **What's illegal?**—There's considerable dispute at NLRB on what acts are violations of the law. Whether certain union activity is or is not a secondary boycott, whether unfair lists or certain types of picketing are coercive, and on similar knotty points.

But sharper—and perhaps more important—is the division on whether to exercise jurisdiction. Taft-Hartley is unreal to those over whom NLRB exercises no jurisdiction. Neither builder, union nor worker has any protection. None has any rights. Anything goes.

Thus, NLRB made news for construction last week when it handed down some significant decisions on jurisdiction. Adding last week's decisions to earlier rulings, this is construction's current situation regarding Taft-Hartley:

NLRB will take jurisdiction in such cases as these:

Contractors' association: When it is party to a labor contract, an association as well as a union is subject to the act. (Citation: General Contracting Employers' Assn., Buffalo, N. Y.)

Highway construction: NLRB will exercise jurisdiction over contractors engaged in construction, maintenance or repair of U.S. highways (Strong Co., Springville, Utah, ENR Nov. 3, 1949, p. 15), even though it has declined jurisdiction over some local suppliers of highway construction companies (Brewer and Brewer's Sons, Inc., Chillicothe, O.).

Prefabrication: Large manufacturers of pretab housing are under NLRB jurisdiction in labor disputes. (Hassen & Hodgson, Kansas City, Mo.)

Equipment manufacturing: A building trades union's dispute with the maker of equipment being installed in a construction project will be handled. (Crannan Co., Denver).

Dams: Disputes on large dams which have a major impact on interstate commerce will be handled. (Ozark Dam Constructors, Bull Shoals, Ark.)

Atomic construction: Disputes will be handled, having a substantial effect on commerce. (Atkinson-Jones, Richland, Wash.)

NLRB won't take jurisdiction in such cases as these:

Individual contractor: (See first case above, related to this.) If he is not a member of an association, and his operations are largely local, NLRB won't take jurisdiction. (Stanbinger Construction Co., Buffalo, N. Y.)

Local project: If a labor dispute involves a project of local character, it won't be handled, even though the contractor's whole operation has a substantial effect on commerce. (West Virginia Electric Corp., Fairmont.)

Secondary boycott: A dispute involving a secondary boycott won't be handled "even though the contractor might do more than $500,000 worth of business (dollar value is sometimes important in determining the local nature of a contracting business) some of it for manufacturing firms directly in interstate commerce—

NLRB to hear vote pleas

National Labor Relations Board struck hard this week at the "no-election" policy of its independent general counsel, Robert N. Denham.

The board ruled that it would hold hearings on the petitions for representation elections filed in Olean, N. Y., Knoxville, Tenn., and Baltimore. All petitions had been filed by the AFL Plumbers and Steamfitters Union. Denham, at line with his policy, protested the petitions. The union appealed, and NLRB has ordered hearings held. The action does not compel NLRB to hold the elections.

With the decision, Denham announced he would ask the hearings be held by staff trial examiners rather than by regional directors, who are under his jurisdiction and committed to his viewpoint. Principal issue will be whether the bargaining unit sought by the plumbers union is an appropriate one. A union shop is sought at Olean. In Knoxville and Baltimore, bargaining elections are asked.

Dean Westergaard dies

Harald M. Westergaard, Gordon McKay professor of civil engineering and former dean of the Harvard Graduate School of Engineering, died at Cambridge, Mass., June 22. He was 64 years old. A native of Denmark, his U.S. career began at the University of Illinois in 1906. He became professor in 1927, continuing until 1936, when he joined the Harvard faculty, becoming dean a year later.

In 1929-30, he was on leave from Illinois for technical studies on Hoover Dam for the Reclamation Bureau. He also served the Bureau of Public Roads as special analyst and senior mathematician on slab design problems. He was also consulting structural engineer for the Bureau of Yards and Docks.

He authored many technical papers, mostly on structural mechanics and the theory of elasticity. An authority on the strength of structural materials, he was noted in recent years for mathematical solutions of airport and building slab design problems.

another possible consideration in determining jurisdiction—Pettis Bannister Co., Anniston, Ala.

Residential construction: Generally, this is local and won't be considered even though it might involve a secondary boycott.—Denver Building and Construction Trades Council.

Construction supply dealers: Local supply dealers won't be considered under jurisdiction.—Texas Construction Material Co. and Makins Sand & Gravel Co.

Drive-in theater: Won't be considered, being a local project, despite $50,000 cost and purchase of supplies in interstate commerce.—Petrello & Fryer, Pittsburgh.

Jurisdictional dispute: Even though a labor dispute involves a union jurisdictional dispute, a special Taft-Hartley-type jurisdiction won't be taken.—West Virginia Electric Corp., Farmington.

Yes and no: In the Buffalo Contractors' Assn. case, NLRB took jurisdiction unanimously where the construction was involved. Illegal closed shop charges, filed against the association, three contractors and the AFL Hod Carriers union, will soon go to hearing.

But, by a 3-2 vote, NLRB refused to include Steinbinger in the same case because Steinbinger was not a member of the association. Chairman Herzog joined Member Reynolds in a dissent. He thought Steinbinger, who was doing more than $500,000 a year in business, was big enough to warrant taking jurisdiction. That gives some clue to the board's ideas on how much a contractor's total volume should enter into the decision to take or refuse jurisdiction.

Another angle to the Buffalo case is this: Reynolds, who dissented on Steinbinger, went along with the majority in the dismissal of charges in this case against a fifth contractor, Anthony Simich, a small masonry contractor. He figured Simich's operations were so small, so quickly under the "de minimis" doctrine (courts won't concern themselves with trifles), Reynolds believes that NLRB should reject jurisdiction only in cases involving this doctrine.

• **Standards but not rules:** There are standards for determining whether a job affects commerce and thus is subject to Taft-Hartley. But there are no exact rules for measuring when a dispute would have a "substantial" effect on commerce. So members must use their own judgment as to whether or not a job comes under Taft-Hartley jurisdiction.

The board, for instance, has had a rule of considering all a contractor's operations in determining the impact on commerce of a dispute involving him. But consider the West Virginia Electric case.

With Herzog and Reynolds dissenting, NLRB refused jurisdiction of a union jurisdictional dispute because the job was only a $45,545 electrical contract on an elementary school. In this case, the contractor does $100,000 yearly, 25% of it outside West Virginia. In his dissent, Herzog urged the board to stand by its "previously well settled policy" of considering a contractor's operations in the long run as a whole.

• **The politics:** On NLRB today, three pro-labor members are in control. Thus, Herzog usually has the choice of joining them in a decision or of dissenting, with Reynolds.

This wasn't the case until last winter. Then, Paul L. Styles, a former AFL official from Alabama, replaced J. Copeland Gray on NLRB. Gray, who came from management, usually sided with Reynolds, while members Houston and Murdock generally voted pro-labor. This normally left Herzog to cast the deciding vote on most contested issues. That's no longer the case, with the Houston-Murdock-Styles line-up.

So Herzog's losing his effectiveness as chairman. This is another one of his reasons for wanting to quit when his term finally expires in August.

•

Kiley to succeed Buford as Milwaukee road head

John P. Kiley, a Chicago civil engineer, will become president of the Chicago, Milwaukee, St. Paul and Pacific railroad Aug. 31, when Charles H. Buford retires. Kiley now is vice president in charge of operations.

Kiley, who had worked for the road as a station clerk during his college vacations, joined the staff in 1913 after his graduation from Villanova College, Villanova, Pa., as a civil engineer.

He was made assistant to the president in 1940, with headquarters in Seattle. Very late, he was elected vice president and returned to Chicago in 1948, to assume operations.

Buford started with the railroad in 1907 after being graduated from the University of Arkansas as a civil engineer.

He became general manager of the lines west in 1927. From 1937 to 1946, he served as vice president operating and maintenance department of the Association of American Railroads, Washington, D. C. He returned to the Milwaukee road as executive vice president and was elected president in May, 1947.

Buford will remain as a consultant with the road. Board Chairman Leo E. Crowley announced.

PHA lends $100 million for N. Y. C. housing

Largest transaction will finance more than 7,700 units in five projects—First to be ready in one year

New York City's housing business with the federal government is in the $100 million class.

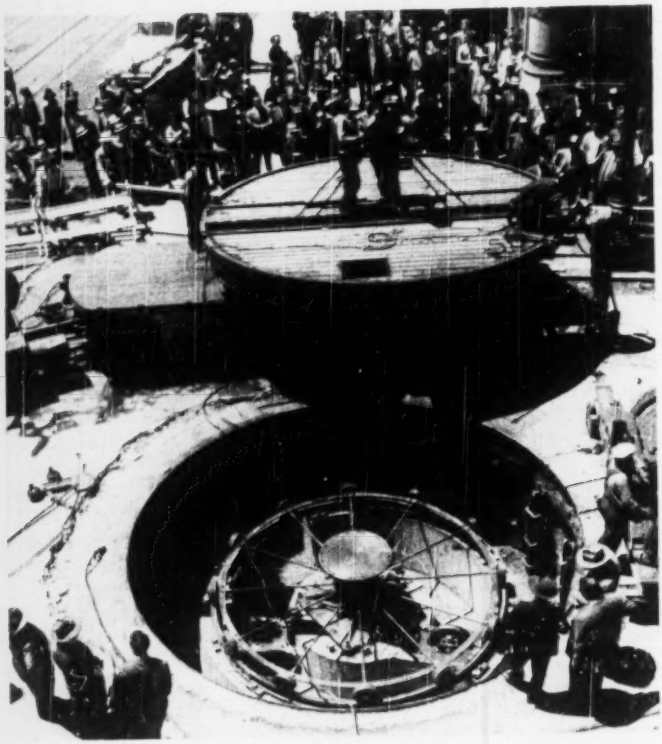
There were only a few less dollars than that involved in a contract between the two last week. Its object: Construction funds for low-rent homes for 7,728 families. The federal loan: $99,604,000. Target date for completion of the first units: Summer of 1951. The dwellings are to be built by the city's housing authority.

Five separate projects are to be undertaken under last week's loan. They represent a little less than one-third of the 24,000 units for which the city has obtained a federal okay. (ENR June 8, p. 28). They're even a smaller proportion of the authority's 5-year program. That calls for 50,000 units at a cost of "close to a billion dollars." The current split-up of expenses on this long-term program calls for $700 million of it to be federal aid, $20,000,000 of it to be city financed and the remainder state aid.

• **Homes for half a million:** There'll be half a million persons living in city-built homes after eight more years, according to Gen. Thomas E. Lovell, authority chairman. Right now, the authority has 25 projects under construction (the maximum held). They'll cost $700 million.

Under the terms of the National Housing Act of 1949, the Public Housing Administration guarantees up to 60% of development costs and offers a 60-year annual rent subsidy of 45%. That'll bring the authority $447,850 yearly under last week's contract. It also will let the low-income tenants pay rents according to their ability to pay. Families whose annual income is below $2,000 for two persons, $2,400 for three or four persons and $2,800 for five or more persons. The rents are higher than they were in pre-war-built homes, but the authority says they're better homes, too.

• **Bond sales soon:** Sale of the bonds which the federal loan will be repaid probably will occur early next year. The first such bonds under the National Housing Act are scheduled to be offered in September. Early money pinchers will be watched closely by housing officials throughout the country for an indication of the interest cost they'll incur. With broad federal guarantees and tax-free, authority housing bonds are expected to provide some pretty inexpensive financing for the 1950 program.



SO THAT'S HOW THEY DO IT—San Francisco sidewalk engineers have a sentimental—as well as professional—interest in this job. They're watching a crane lower a new turntable for one of the city's cable car lines. A new center anchorage and rail pier of reinforced concrete has been poured and the pit wall resurfaced.

Job prospects good for engineers

Today's college-bound youth need not fear for its job prospects in engineering. Technical graduates this year are getting jobs or offers in abundant supply despite their numbers. And there's not much predictable shortage of engineers coming in four years.

Something to that effect was observed last week at Seattle before the 58th annual meeting of the American Society for Engineering Education.

Time out of the engineering graduates in 1950 would have had either received jobs or definite offers when they were interviewed recruiting was surveyed by the Manpower Committee of the Engineers Joint Council. Covering 117 engineering schools, the survey found that 62.5% was placed by June 15. An estimated 20% more had offers. A similar survey last year showed 62% of the graduates placed by July 1, 95% by November 1.

• **Warning: Smaller classes.** Lower entering freshmen are anticipated next fall in engineering classes partly because of reports that the field is overcrowded. Actually, warned M. M. Boring, of General Electric Co., chairman of ERC's committee, "we very clearly will face a serious shortage of engineering graduates four years from now." The shortage might become acute as early as 1952, he added.

Morris L. Cooke, chairman of the Water Resources Policy Commission and an old economic specialist, urged engineers to "get their district for government and politics." He warned that the profession would be unable to play its full role in developing world at its maximum level unless engineers "understand our present-day imperfect attitude toward government."

Members were told of the completion of the first phase of ASEE's three-point program to further engineering education. A manual entitled "Effective Teaching" has been published and 10,000 copies of it sold in three months. Elsewhere in that program, a committee has completed a preliminary study of improved teaching methods. Teaching aids are being reviewed with a view toward publication.

Three awards for advancement of engineering education went to Fred B. Seely, Rolf Eliassen and Harry P. Hammond. Seely, chairman of the department of theoretical and applied mechanics, University of Illinois, was awarded the Lamme Medal. Dr. Eliassen, professor of Civil and Sanitary Engineering, Massachusetts Institute of Technology, won the Westinghouse Award (see p 12). Dean Hammond, of Pennsylvania State College, won the James H. McGraw Award. The latter was presented for the first time this year by the McGraw-Hill Book Company for distinguished contributions to technical education at the sub-college level.

• **Wanted: Broader training.** Dean Thorndike Saville, of New York University, retiring president of the society, criticized "compartmentalized" education, with two-year technical institutes for draftsmen, surveyors and similar skills. He urged that state educational systems be induced to integrate pre-engineering aspects of the technical institutes and junior and community colleges into a broad program of engineering education. He urged also that college effort be concentrated on a fundamental background in engineering science, not upon mastery of a specialty.

Dean E. M. Dixon, of Iowa State University, was elected president to replace Dean Saville. T. E. Gunter, of Illinois Institute of Technology, and Gerald Rosselot, of Georgia Institute of Technology, were elected vice presidents. C. F. Scheffey, of the McMillan Publishing Co., is treasurer.

Dr. Rosselot was elected chairman of the Engineering College Research Council, which met during the ASEE convention. A. G. Conrad, of Yale University, was elected vice chairman. Ralph A. Morgan, University of Illinois, Kurt F. Wendt, University of Wisconsin, and Ira Walker Penny, Texas State College, are directors.

Carpenters reject pact

San Francisco Bay area carpenters have voted down a three-year contract their negotiators worked out (see ENR June 22, p 901). Voting against the new contract was 5,500 to 5,200. The contract called for a 10¢ per hour wage boost this year and increases of 5 cents in 1951 and 1952. Nineteen unions and eight employer groups had signed it.

CONSTRUCTION BUSINESS

Lumber price rise tapering off

Price increases of $2-$13 a thousand on Douglas fir and pine hit eight major cities early in June. Prices (job city) were steady throughout the month in five coastal cities. The June increases may be the topping out of the current advance, according to representatives of large mills and to reports from pricing centers.

Prices are expected to hold near present levels in Chicago, Cleveland, New York, Baltimore and Seattle. First signs of a leveling off appeared about three weeks ago (See ENR June 15, page 27).

• **Current prices**—Prices affected by the early June increases compare with a month ago as follows: (fir 2x4s, $ per thousand, No. 2 or better, job city)—Baltimore $107.50, up $5.50; Chicago $111, up $3.50; Cincinnati (estimate) $96, up $2.85; Cleveland (estimate) $112, up $5; Denver $125, up $7; Kansas City $127.50, up $13.50; Minneapolis, $120, up $10; Pittsburgh $97.50, up $2.50; St. Louis $124, up $4.50.

Fir prices held steady through June in Boston, $94; Los Angeles, $101; New York, $130; Seattle (mill) $75; Philadelphia, $115.

Firm price quotations are not available in Cleveland or Cincinnati. Cleveland sellers point out that the mills refuse to quote except for spot delivery and when lumber is available to fill the order.

• **Outlook**—Lumber demand at the mills is very strong, but spokesmen of large companies say they see no further price increases. Right now, the mills are not able to take care of current order volume. Dealers are not ordering far ahead, apparently hoping to commit themselves to any more high-priced inventories than necessary.

At the local level also, prices are thought to be stabilizing in some cities. In Baltimore, there are slight shortages of a few items of Douglas fir but nothing serious; prices are believed to have reached their peak. In New York, lumber is not quite so short as it was but deliveries are still slow; prices may continue to hold around the June 1 level. In Seattle, supply is tight, but prices have been level for almost two months.

Inland, the supply is more varied and prices showed signs of going up last week in some areas. Kansas City prices were still in an uptrend last week, but had lately shown signs of leveling off. In Minneapolis, supply is tight, with no relief in sight. Chicago supply is improving, and prices are thought to be leveling off. In Cleveland supply is very short, but it may improve if shipments keep coming in as they have lately.

Labor supply notes

• **Seattle**—Labor is in good supply in Seattle except for a shortage of bricklayers.

• **Baltimore**—The skilled labor shortage is growing in Baltimore. Bricklayers, electricians, plumbers are at a premium. Contractors are advertising for bricklayers at $2 a day over the basic rate.

Hoisting engineers are scarce. It is anticipated they will become scarcer as Chesapeake Bay Bridge construction advances.

• **Chicago**—The Chicago carpenters' 5-cent welfare fund negotiated last month is not official yet. The workers are voting on whether to take the 5 cents hourly in cash or welfare.

Labor supply continues adequate in Chicago.

• **Los Angeles**—There are reports of widespread "pirating" of labor by premium wage offers, and materials price bonuses paid suppliers in Los Angeles.

The Home Building Institute in Los Angeles has voted to put pressure on any member who gives bonuses to materials suppliers or who lures other contractors' workers by offering premium wages.

• **St. Louis**—Building permits hit a new high last month and are expected to increase the next few months, creating some skilled labor shortage.

But so far there is no strain on builders; out-of-town labor is filling gaps in larger jobs, no materials price premiums are reported, and bidding is competitive and free of escalator clauses except as to material prices in some cases.

Middle West prices up

Prices of brick and some other materials increased in the Middle West in early June, while they were steady elsewhere. Lumber prices are also especially strong in Midwestern cities.

Price increases on common brick are Cincinnati, up 25 cents a thousand to $32.50; Cleveland, up $1.50 to $30; Detroit, up $1 to $28.50; and Pittsburgh, up $2 to $28. These price increases are attributed to wage increases granted clay workers throughout the south central portions of the U. S. in the past two months.

Crushed stone is up 25 cents a ton in Detroit and 5 cents in Kansas City. Concrete block is up ½ cent a block in Cincinnati, 1 cent in Detroit, and ¼ cent in Kansas City.

Paving asphalt is up $1.50 a ton to $21.50 in Cincinnati. Cutback asphalt is up a cent a gal to 9½ cents in Cincinnati and up 1.1 cents a gal to 9.76 cents in Detroit. Road oil is up 2¼ cents a gal to 6.1 cents in Kansas City and up ½ cent a gal to 9.7 cents in Detroit.

Cement output, shipments a record last month

May cement shipments and production by mills set new records, thus beginning to reflect this year's record construction volume.

Shipments for May total a record 22.8 million barrels, 17½% above the same month last year. Only months the mills ever shipped more than this were August and September of last year.

Production for May was 20 million barrels, 7% higher than last month and an all-time record output for one month.

Mill shipments earlier this year ran only 3% over last year, despite record construction volume put in place. Department of Commerce analysts think dealers supplied the extra high demand by drawing down on their stocks. But there are no figures on dealer cement stocks to prove this.

Cost outlook improved by federal budget change

The federal budget may be almost balanced in fiscal 1951, which starts next month. And a balanced federal budget means there is little chance of inflation.

This means that materials producers are more likely to hold prices down, and labor leaders are more willing to settle long-term wage contracts.

Budget balance is not the most important influence on the construction cost outlook, but it is a factor. An inflation fear would make producers more apt to raise prices and labor leaders more aggressive. The way it looked this spring, a big government deficit was in the offing. Some economy-minded Congressmen and others voiced their fears of an unyielding price rise, unless the budget came closer to balance.

Now the fiscal 1951 cash deficit is seen as only a half-billion dollars, compared with earlier Budget Bureau forecasts of $2.7 billion.

BIDS AND BIDDERS

(Major project items received after Construction Reports, page 76, went to press)

Apartments—Albert P. Dicker & Louis Gregory, Washington, D. C., plan to construct 2,500 unit brick garden-type apartment projects with shopping center, theater, recreation center, tennis courts and swimming pool on 181 acre site at Indian Head Rd. and Livingston Rd., Upper Marlboro, Md., 2.5 miles south of D. C. line, to cost between $17,000,000 and $20,000,000.

Dwellings—Chocolate Bayou Estates, Houston, Tex., plans 2,500 dwellings for Negroes on 530 acre tract near Holmes Rd. for $17,500,000. Knostman & Webster are architects; Robert Atkinson is consulting engineer.

Laboratory—Atomic Energy Commission received low bid on 2-story, basement, chemistry laboratory building in Los Alamos, N. M., from Utah Construction Co. and C. H. Leavell & Co., Ltd., El Paso, Tex., at $11,269,290.

Military installations—Grosland Construction Co., Bellingham, Wash., submitted low bid of $8,835,000 to U. S. Engineers for constructing officers', NCO's and airmen's quarters; central heat and power plant; operations building; warehouse and cold storage; vehicle warm storage; mess hall; recreation building; dispensary and administration building; POL station storage; outside utilities and roads at Capes Romanzof, Prince of Wales and Lisburne, Alaska.

Office building—Turner Construction Co., New York, N. Y., was awarded contract for 32-story addition to the Chrysler Building, Lexington Ave. and 42nd St., New York, by the W. P. Chrysler Building Corp. for $9,000,000. Reinhard, Hofmeister & Walquist are the architects; Guy B. Panero, consulting engineer, and Edwards & Hjorth, structural engineers.

Hotel—Sheraton Hotel System, Ernest F. Henderson pres. will build a 600-rm. hotel in Dallas, for $9,000,000.

Housing—Newark, N. J., Public Housing plans constructing 730 apartments, three and eight stories high, in the South End Project, Dayton St. at the Elizabeth-Newark line, for $8,637,000.

Waterworks—Dallas, Tex., voted $7,800,000 bonds for waterworks expansion. J. E. Conroy is Public Works engineer for the project.

Turnpike—D. W. Winkleman, Inc., Syracuse, N. Y., was awarded contract by the Pennsylvania Turnpike Comm. for constructing 3.78-mi. and 4.99-mi. extensions of Turnpike in Lawrence and Beaver Counties for the sum of $4,053,986.65.

Housing—Hoboken, N. J., Public Housing Authority plans to construct 598-unit housing project for $7,000,000.

Hospital—U. S. Public Buildings Administration awarded contract for 6-story, basement addition to U. S. Marine Hospital, San Francisco, Calif.; to Robert E. McKee, Los Angeles, for $3,786,000.

Hotel—Adolphus Hotel, Dallas, Tex., plans a 20 to 22-story, 520-room addition to cost $5,500,000. Wyatt C. Hedrick, Dallas, is consulting engineer.

Housing—Jersey City, N. J., Housing Authority plans to construct in the Greenville Section a $5,250,000, 500-unit housing project. Kelly & Gruzen, New York, N. Y., are architects. Plans also 60 unit housing on Bright St. to cost $600,000 and six 10-story buildings with 462 units on six acres on Montgomery St. to cost $5,000,000. Christian H. Ziegler, Jersey City, is architect.

School—Muscogee Co., Ga., voted bonds for school improvements to cost $4,250,000.

Highways—Included in the letting of 18 New York State Highway projects were the 0.36-mile elevated section of the Major Deegan Expressway, Bronx Co., for $4,079,447 to Johnson, Drake & Piper, Inc., of New York, and the 0.28-mile Cross Bronx Expressway Highbridge Interchange, New York Co., for $5,163,476 to Poirier & McLane Corp., New York.

Factory—Westvaco Chemical Corp., New York, N. Y., Division of Food Machinery & Chemical Corp. of San Jose, Calif., awarded contract for $5,500,000 Lawrence, Kan., chemical factory to Bechtel Corp., San Francisco.

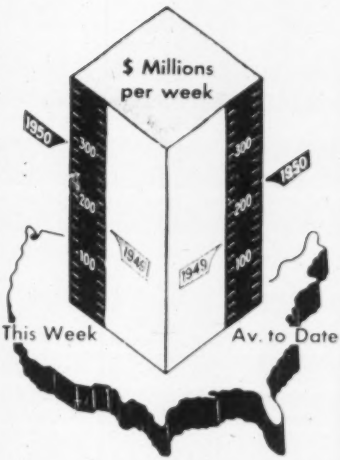
Housing—Perth Amboy, N. J., Public Housing will construct 252 unit housing for $3,500,000.

Buildings—U. S. Atomic Energy Commission, Los Alamos, N. M., received low bid on 31 reinforced concrete buildings and facilities for $2,062,500 from R. J. Dunn, Albuquerque.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base	1926	1913	1926
Construction Cost	June '50	568.4	243.45
Building Cost	June '50	272.96	263.41
Volume	May '50	404	266



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

Week of June '29	This Week 1950	Cumulative 1950 (26 wks.)	Cumulative 1949 (26 wks.)	% change
Fed. (a)	$ 4.1	$ 71.5	$ 58.1	+23
State & Mun.	89.0	1,711.0	1,924.4	−11
Total Public	$110.2	$2,426.7	$2,047.5	+19
Total Private	117.4	3,238.4	1,892.5	+71
U. S. Total	$255.6	$5,665.1	$3,940.0	+44

Contracts by type of work

	This Week	Cumulative 1950 (26 wks.)	Cumulative 1949 (26 wks.)	% change
Waterworks	$ 4.1	$ 71.5	$ 58.1	+23
Sewerage	1.6	38.5	39.1	−1
Bridges	2.2	134.9	122.0	+11
Highways	42.9	617.7	360.9	+72
Earthwork				
Waterways	3.3	226.8	288.6	−21
Buildings				
Public	27.1	454.3	355.9	+28
Heavy ind.	3.3	158.1	201.2	−21
Heavy ind.	3.3	1,006.8	555.7	+81
Industrial	5.8	181.6	230.0	−21
Commercial	28.8	181.6	230.0	+79
Unclassified	7.8	125.1	215.5	−42

(a) NEPA. Major non-public projects included are: Waterworks and waterway projects, $58,000; other public works, $3,000; industrial buildings, $6,000; other buildings, $226,000.

New capital for construction

	Cumulative 1950 (26 wks.)	Cumulative 1949 (26 wks.)	% change
Corporate Securities	$ 1,939.0	$ 1,737.0	+12
State & Mun.	1,711.0	1,924.4	−11
Fed.	71.5	58.1	+23
Total Capital	$ 3,721.5	$ 3,719.5	+0.1

Western road officials discuss truck limits

Reno meeting hears committee report and trucker's recommendations on size and weight limitations

Truck size and weight limitations highlighted sessions of the Western Association of State Highway Officials at Reno, Nevada, June 12-15. Recommended limitations were presented by a representative of the trucking industry as well as by a committee of the association. A comparison (see table) shows marked agreement but differences are significant—particularly those regarding maximum height and weight.

The group includes highway officials from the 11 westernmost states, Texas, Alaska and Hawaii, and the Bureau of Public Roads. It was WASHO's 29th annual conference.

The trucker's viewpoint was presented to the group by John L. Springer, managing director and president, of Western Highway Institute. WHI is a research group with trucker membership in the 11 western states and Alaska. Springer said that, as far as he knew, his address was the first time a representative of the motor carrier industry had appeared before that group.

• **Joint committee possible**—C. S. Paxson, Oregon bridge engineer and chairman of the WASHO committee, presented its report. Both speakers referred to the possible organization of a joint committee to study size and weight limitations composed of highway officials and trucker members. Paxson pointed to the need for economic data, particularly as regards trucks, operation, so engineers can balance economy of operation against the added cost of constructing, operating and maintaining facilities necessary to accommodate heavier loads than are now carried under applicable state restrictions.

The truck size and weight limitation recommendations are an effort to achieve a greater degree of uniformity among states. The WASHO group first adopted standards in 1958.* The American Association of State Highway Officials did likewise in 1946. Main difference between WASHO and AASHO standards are in height, length of truck-trailer combinations and axle group limitations. Here also is where the trucker recommendations differ from those established by WASHO (all WASHO).

As to height, the truckers want a 13-ft 6-in. limit as opposed to the AASHO limit one foot less.* The WASHO limit was 13 ft 6 in. in 1958 but the present committee recommended against exceeding 12 ft 6 in. until highway structures more universally permit the increased height (national design standards call for a 14-ft clearance and this will not safely pass 13-ft 6-in. vehicles).

Length is another major point of argument. AASHO limits truck-trailer combinations to 50 ft (all but one of the eastern states restrict length to 50 ft or less) and WASHO allows 60 ft (permitted in all but two WASHO states). However, the truckers want a 65-ft limit, as permitted by four western states.

• **Differ on weights**—The complex problem of weight limitations on axle groups is another point of difference. Truckers represented by the WHI are seeking slightly more liberal limitation on truck weights by axle groups, than highway officials are known to concede to them.

Both the truckers as represented by Springer, and WASHO, as evidenced in Paxson's report, called for stricter enforcement of existing laws limiting truck weights.

Other conference speakers included WASHO President W. T. Holcomb, Nevada State Highway engineer; Hal H. Hill, WASHO executive secretary; A. N. Carter, AGC highways division manager; Louis A. Woodward, Jack Vinsonhaler, Portland consulting engineers; and George M. Williams, western headquarters, Bureau of Public Roads.

New officers are W. E. Mahoney, chief engineer, Utah Highway Commission, president; A. M. Nash, district engineer in California, vice president; and L. A. Elliott, district engineer for the U. S. Bureau of Public Roads in Texas, secretary-treasurer. Directors are W. A. Bugge, Washington; P. G. Poore, Montana; and Mark Watrous, Colorado.

TRUCK SIZE AND WEIGHT LIMITATIONS

	Recommended by WASHO Committee	Western Highway Institute
Width:		
Body	96 in.	96 in.
Wheels	*102 in.	102 in.
Height:	12 ft 6 in.	13 ft 6 in.
Length:		
Single units	35 ft	35 ft
Combined units	60 ft	65 ft
Truck Speed:		
Minimum	45 mph	
Maximum	"no unnecessarily slow operation"	
Weight:		
Single axle	[illegible] lb	18,000 lb
Tandem axle	32,000 lb	over 32,000 to 40,000 lb, depending on spacing from 4 to 15 ft
Total load	[illegible] lb	76,800 lb

* As weight or structures permit in accordance with

Pollution control group established by Kentucky

Stream cleanup in Kentucky was accelerated last week when legislation became effective that establishes a state water pollution control commission.

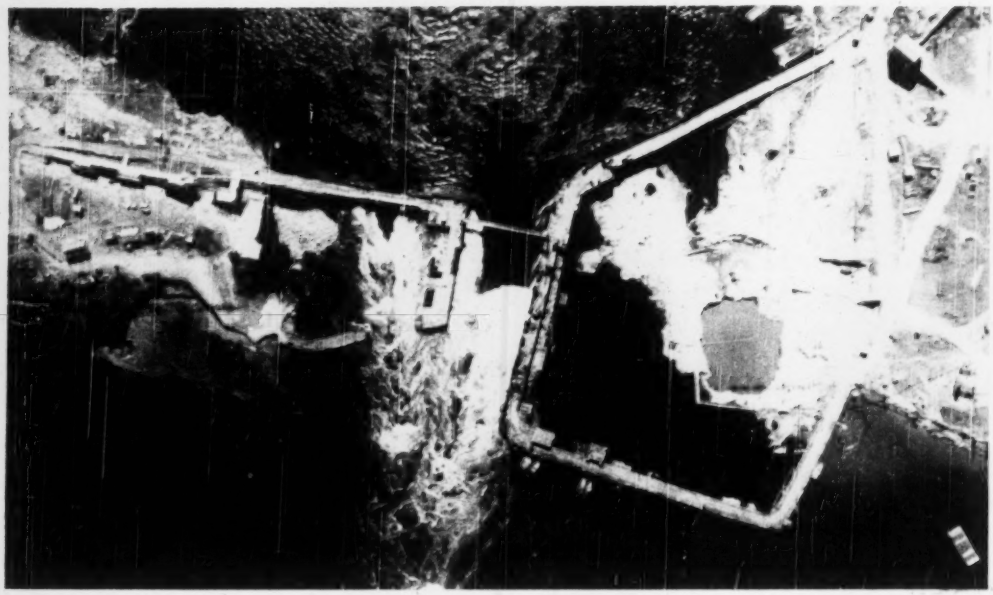
The new law resulted from Kentucky's participation in the Ohio River Valley Water Sanitation Compact, which pledges signatories to enact suitable legislation for promotion of basin-wide pollution control.

Kentucky's new commission is empowered to establish quality standards for water according to use. It may issue orders requiring abatement of pollution or adoption of remedial measures to curb it.

Anyone now discharging wastes will be required to obtain a permit to continue doing so. Such permits may be conditioned. No new discharges will be legal without commission approval, nor will changes in existing discharges be legal without approval.

The new commission will be under the state health department. Members of the seven-man board will include Dr. Bruce Underwood, health commissioner; Henry Ward, Conservation Department commissioner; A. E. Funk, attorney general; Earl Wallace, fish and game director; and two lay members, one to represent industry, the other municipalities. J. Clarke Durgin, director of sanitary engineering in the Health Department, will be technical secretary and administrative agent of the new group.

Pollution control activities in Kentucky will be integrated closely with the Interstate Ohio program because of interlocking membership in the two.



FLOODS THREATEN COFFERDAM—High water in the Winnipeg River, Manitoba, late in May threatened for a time to overtop the powerhouse cofferdam (right center) at the Pine Falls power development. To relieve the situation, two breaches were blasted in the sluiceway cofferdam (left) to provide an additional channel. The flow at that time had reached 97,000 cfs. Water inside the powerhouse cofferdam was leakage. It has since been pumped out and rock excavation has been resumed. The dam and power plant are being built by the Manitoba Department of Mines and Natural Resources, for which J. R. Rettie is project engineer. Contractor is the Foundation Company of Canada.

"One job" companies are tax law target

If a bill now shaping up in the House Ways and Means Committee ever becomes law, one of the most effective tax maneuvers yet devised will be outlawed for good.

It's the "one-shot" or "collapsible" corporation. It has been used hundreds of times by movie producers and building contractors to get profits income for taxation as capital gains rather than at the treatment applicable to ordinary income.

For several years the Bureau of Internal Revenue has been trying to stop the practice and to recover such savings. But until the report brought out the maneuvering is still going on.

• **When is a collapse.** Usually it's hard to prove that a collapsible really is being operated when the corporation completes the job—at the box office. Anyway the bureau hasn't been able to collect in every case, though its efforts have scattered a lot of would-be imitators. Now, however, the committee's action would make it easy for BIR to crack down.

The typical "collapsible" corporation is organized to produce one movie or put up a block of apartment houses or other building. While the job is finished—and before any income is earned—the corporation is dissolved, its assets are distributed to its stockholders. No tax is paid by the corporation as it has received no income.

For tax purposes, the stockholders value the film or building at what they guess it will bring after. Then they pay relatively small capital gains taxes on the difference between their original investment and this tax-free value. Any income is treated up to the market value; it's considered tax-free. And that's all there is to it.

Here's how the device was used:

• **One film only.** A corporation was organized in California for the sole purpose of making one film. The producer and his wife owned all the capital stock (par value $1 a share). A year later, when the film was finished and distribution contracts signed, the corporation was liquidated.

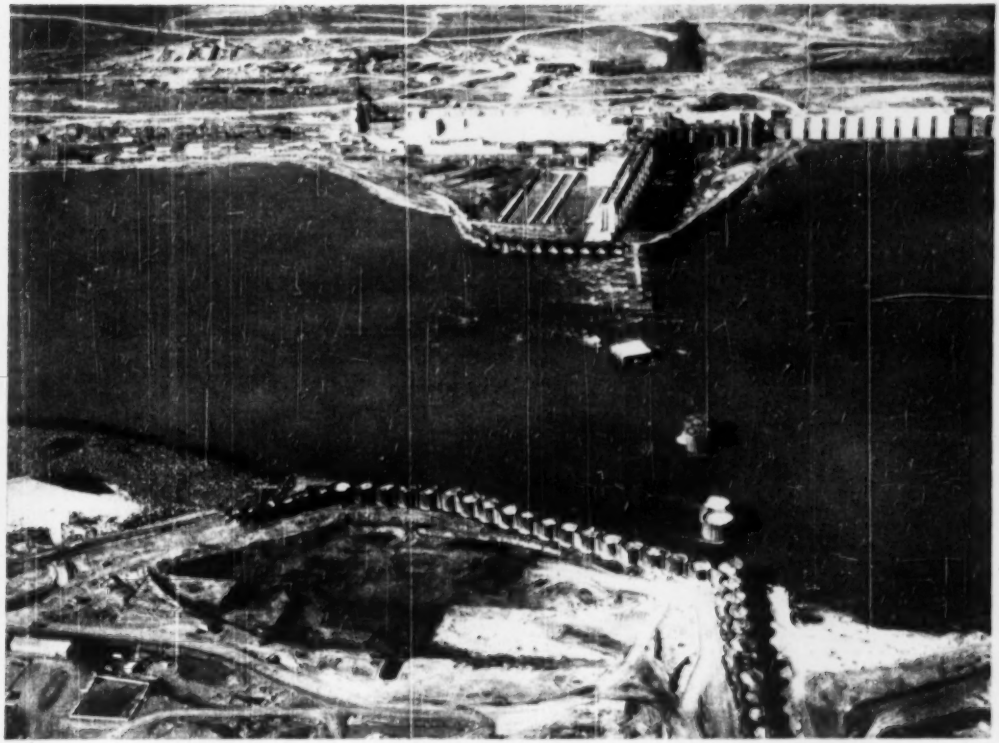
Market value of the film was estimated at $2,452,000. To avoid this and to give the producer deducted his original investment, plus production costs which he had assumed to liabilities of the dissolved corporation. The net gain was better than $500,000. The 25% ceiling on capital gains keeps the producer's tax down to about $150,000. Had the producer not qualified the income thus, he would have paid regular corporate taxes of 38% and individual taxes up to 82%—almost $500,000 in all. So he's ahead more than $250,000.

To end this kind of tax calculation, the committee voted to tax as income any gains realized within three years after completion of the operations for which the corporations were created. Now you hold them six months.

• **BIR isn't happy.** Strangely enough, the committee's vote hasn't made BIR officials entirely happy. They want some legislative action, of course. But they object to the form the proposed draft takes.

In their view, the language may lead to a loss of revenue. Reason: In setting out what taxpayers may not do, the new provision implies what they may do. In other words, they feel that a lot of businessmen now paying income taxes may be encouraged to set up "collapsibles" when next there's a boom.

There's a good chance that, by the time a bill gets to the White House, the language problem will have been straightened out. It's not a serious defect. Most Congressional tax experts think that the committee's action



THE SITE FOR THE BATTLE with the river is the 240-ft gap between the two pairs of sheetpile cells in the right center. By early fall other cells will block the rest of the river flow, after which precast concrete blocks and rock will be dropped from a cableway to close this opening.

The toughest river diversion in construction history . . .

Taming the Columbia River at McNary Dam

Colonel William Whipple
District Engineer
Walla Walla District, Corps of Engineers

FINAL WORK is under way to prepare for what promises to be a spectacular construction feat: the taming of the Columbia River at McNary Dam.

To close the upstream part of the second stage, enabling the entire flow of the river must be forced through twelve 150-ft blocks in section of the spillway each 50 ft wide, built within the first-stage cofferdam.

Here is what makes the job tough and unique: The lowest flow that can be expected in the river is 104,000 cfs. Final closure must be made against a 17- to 20-ft head on a work channel 40 to 50 ft deep at last water.

• Controlling factors. There are only one time of the year, early October, when closure can be safely attempted. Then it must be through the entire section at one time through the 150-ft blocks. Water and ground

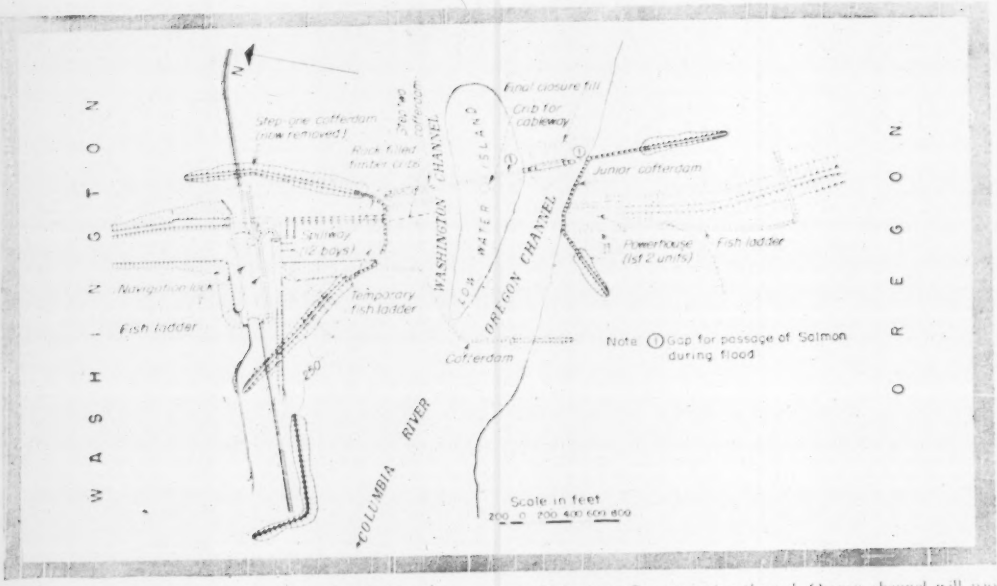
Earlier articles published on McNary Dam work are:
McNary Dam Includes Highest Lift Lock (ENR Sept. 30, 1948, p. 56)
Step-Two Bids Received on McNary Dam as Step-One Concrete Work Proceeds (ENR Aug. 11, 1949, p. 26)

final closure, an operation that may take as much as two months.

To allow maximum time for preparations, the final closure scheduled for October 1950 was included in the major construction contract awarded in August 1947. The general plan was specified by the Corps of Engineers, but methods of placing component parts were planned by the contractor to provide a very rapid and sure closure of the entire channel.

• Initial steps. The Washington channel, about 20 ft deep, has been divided by eight heavy sheetpiled timber cells, each about 45 ft square and 50 ft of water. These cells were partly built on the shore, floated into place, and filled from a construction bridge. They are to reach little to the rough bottom and designed to withstand heavy ice and flood conditions.

As initial steps, it is planned to



COFFERDAM LAYOUT and closure details at McNary Dam. Log and barge traffic now going through Oregon channel will pass through the navigation lock after diversion of the river through the spillway section.

drop concrete stop logs in front of the cribs, to allow the driving of steel pile cells in quiet water upstream.

The island between the Washington and Oregon channels is swept by flood waters in spring and early summer. But after the flood, the section will be blocked by sheet pile cells built in the dry.

Astride the deep 240-ft wide Oregon channel two sets of two cells each have been placed behind temporary cofferdills run out from the sides. The gaps shown in of these cells are now open to allow passage of salmon that might otherwise not be able to overcome the concentrated current during the June flood. These gaps can be filled by sheet pile cells prior to the final closure.

Normal river traffic is still able to navigate the deep Oregon shore channel even though velocities up to 9 mph have been recorded. When diversion starts, the navigation lock will be available with a temporary gate setting.

Work already done inside the Washington shore cofferdam includes the twelve spillway bays, the navigation lock and the fish ladders. The spillway bays are left at 16 ft below final elevation to pass the river flows after diversion this fall. These bays will be shortened and closed to final elevation under a second contract late this year. At that time the river flow will be directed through skeleton powerhouse bays.

On the Oregon shore a "junior" cofferdam abuts the deep water channel. This permits early start on portions of the powerhouse so generating units can be placed on the line soon.

• **Final closure steps.** Alternate methods for final closure of the main channel were tested in the Corps of Engineers' hydraulic laboratory at Bonneville Dam. Steel sheetpiling alone is precluded by depth and flow velocity; closure by cribs would be possible but very inefficient because of unprecedented heavier pulls and an irregular channel with steep sides that even overhang in spots. The narrow channel and irregularity of rock method of closure by dumping rock from a trestle or barges, even though large rock is used—the native basalt breaks fairly small. The critical portions then will be made of stone tetrahedrons placed at low grade connected. Tetrahedrons will be placed from a cableway with movable head tower anchored to earth-built mound stream on the low water island. Tetrahedrons not subject to the highest water velocities will be made of rock.

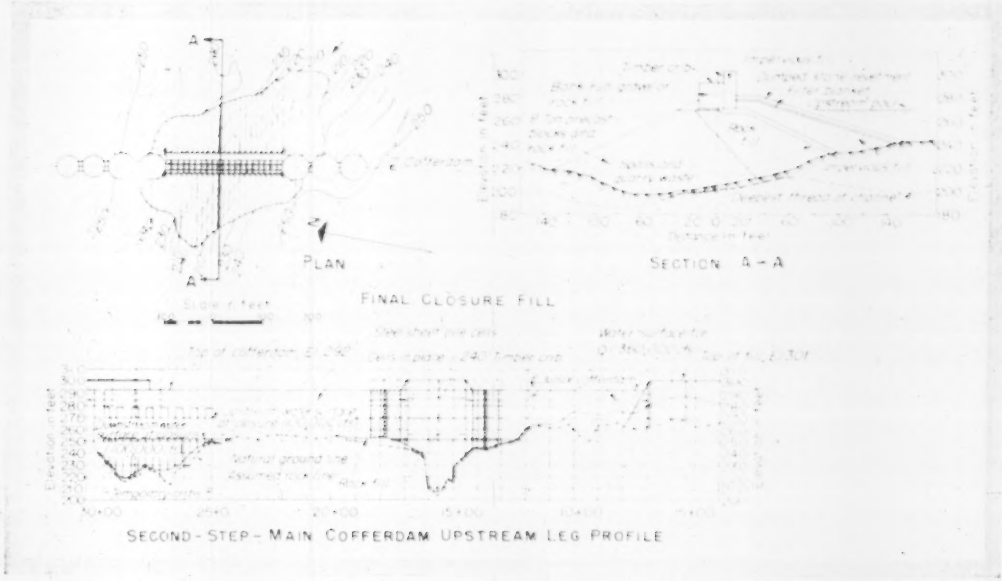
Assuming a total flow of 100,000 cfs and a downstream slope of 1 on 2, the movement of units across the crest of the fill will be 10 fps with a head differential of 9 ft. The tetrahedrons are expected to be stable under such velocity conditions.

However, when the fill is raised another 10 ft, with a head differential of 12 ft, the velocities on the downstream face will be 33 fps at tailwater elevation if the slope remains at 1 on 2. This is a much more severe condition. Accordingly, a sufficient number of tetrahedrons will be provided to allow for possible movement and a resulting flatter slope.

Water will start pouring through the gaps left in the twelve spillway sections at El 250. For a 100,000 cfs flow, the upstream water surface must be raised to El 270. As the last gap is reached, velocity through the closure section will decrease, since more and more of the flow will pass over the spillway section. Thus, even though there will be an 18-ft head difference between upstream and downstream water levels at closure, most critical velocities will be at about a 12-ft head differential.

Since the highest velocities will occur on the downstream slope, it is planned to spread the tetrahedrons in the lower layers well downstream. Little drops for subsequent lifts may be placed further upstream where slower velocities will be encountered.

The upstream portion of the fill will be made of as large rock as is available. The procedure will be: Place a dike of tetrahedrons; fill upstream from that with a rock blanket almost up to the crest of the dike; place another dike or layer of tetrahedrons then place more rock. All of



UPSTREAM COFFERDAM for second-step construction includes steel sheetpile cells plus a 240-ft-wide rock and precast block fill topped by a timber crib. Cells in Washington channel will be driven in still water formed by concrete logs against cribs.

STEP ONE WORK included navigation lock (left) and spillway sections (right). Step two cofferdam will extend to the right. Note cement barge unloading in foreground.

stalled is noteworthy. By selecting low reactance type generators, one transmission line will be saved. But physical size of the generators will be perhaps the world's largest. Rotor diameter will be 36 ft, over all diameter will be 57 ft and weight will be 600 tons.

The six-bladed Kaplan type turbines will also be gigantic. Runner and shaft will weigh 345 tons and the estimated shipping weight for each turbine exceeds 1,100 tons.

• **Construction progress**—Good progress has been made on construction contracts awarded. The McNary Dam contractors, consisting of Guy F. Atkinson Co., J. A. Jones Construction Co., and Ostrander Construction Co., have been awarded the two major contracts so far at the dam site. R. J. Jenks has been project manager for the Washington shore contract.

Despite unusually cold winters, concrete placed to April 14, 1950, totaled 765,000 cu yd. Concrete work on the Washington shore contract is now complete except for the upper portions of the fish ladder. A temporary gate has been installed in the navigation lock and the cofferdam has been removed. The mixing plant has been dismantled for relocation on the Oregon shore where it will place the first concrete for the powerhouse substructure by the end of June.

TABLE I—STEEL QUANTITIES FOR McNARY PROJECT

Item	Weight (tons)
Reinforcing steel	51,000
Structural steel	4,000
Steel sheet piling	13,000
R. R. rail	17,500
Power units	17,000
Transformers	1,500
Spillway gates	4,600
Lock gates	1,500
Crane	1,000
Embedded steel	9,000
Valves, stop logs, etc.	10,500
Miscellaneous	1,000
Total	131,000

Because of the large quantities of steel and heavy formwork, concrete volume is only a partial measure of progress. In terms of concrete, McNary will be about the eighth or ninth largest dam to be constructed in the United States (1,550,000 cu yd). In the amount of steel used, however, it is believed that McNary breaks all records. Steel used will total 131,000 tons, about three times the amount used in a modern battleship.

Other supply and construction contracts under way involve major work throughout the country as well as at manufacturing plants all over the United States. Contracts have recently been awarded for construction totaling about 40 miles of railway relocations, including rerouting the main line of the Spokane, Portland and Seattle Railway and the Spokane line of the Union Pacific under traffic, through the precipitous cliffs and difficult talus slopes of the Wallula Gap. This work must be completed prior to the flood season of 1951.

About as much more rail relocation remains to be done, including some joint use line, replacing separate facilities. Nine major bridges must be closed or replaced across the Columbia, Snake, Walla Walla and Yakima rivers, with three others across Juniper and Spokiowski canyons.

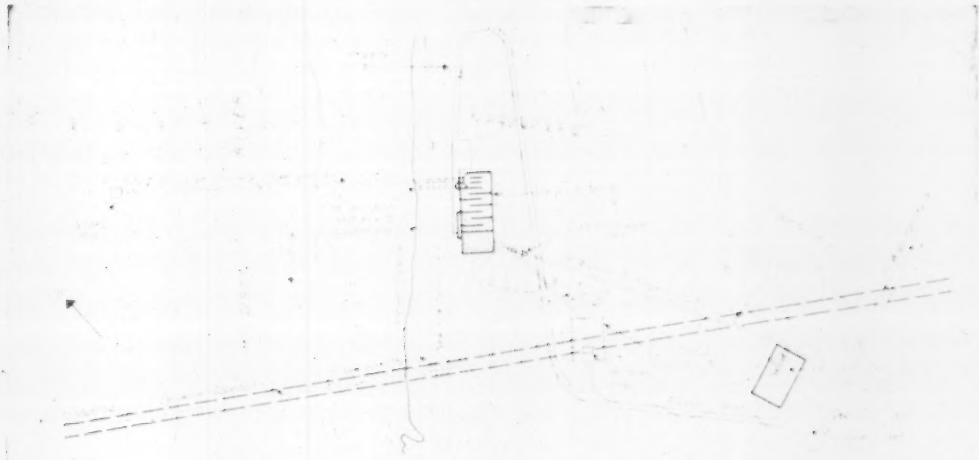
The funds appropriated for this project, totaling $72,575,000 to date, will be practically all obligated by the end of the fiscal year. Total contracts awarded, including continuing contracts, amount to $82,395,000 now.

• **Personnel**—The McNary project is being constructed under supervision of the Walla Walla District, Corps of Engineers. James S. Reeves, chief of engineering division; E. C. Franzen, chief of design branch, and Sam Nett, McNary operations officer and resident engineer. Power plant designs under Robert Schlaikjer of the North Pacific Division office. The North Pacific Division engineer is Col. O. F. Wolfe, who was formerly district engineer of the Portland District and responsible for the earlier planning and construction phases of the project.

TABLE II—STATUS OF MAJOR CONTRACTS* AS OF MAY 15, 1950

Item	Contractor	Date Let	Amount	% Complete
Excavation (Oregon) lock	Guy F. Atkinson Co., So. San Francisco, Calif.	Apr. 14, '47	$748,495	100
Construction of cofferdam	Guy F. Atkinson Co., Portland, Ore.	Oct. 30, '47	1,116,619	100
Turbines for units 1-4	S. Morgan Smith Co., York, Pa.	Jun. 30, '48	4,957,627	10
Concrete aggregates	J. C. Boswell, Albuquerque, N. M.	Jul. 29, '48	1,498,600	100
Construction earth portion of lock and dam approach walls	McNary Dam Contractors, Plymouth, Wash.	Jul. 30, '48	21,850,000	94
Generators for units 1-4	General Electric Co., Schenectady, N. Y.	Dec. 1, '48	2,302,674	7
Construction of Oregon shore cofferdam, etc.	McNary Dam Contractors, Plymouth, Wash.	Aug. 5, '49	15,835,540	16
Tow boats	Mahoney Dredging Co., St. Louis, Mo.	Sep. 30, '49	957,000	5
Relocation of 11 miles (section of U. P. R.R.) railroad	Morrison-Knudsen Co., Inc., Seattle, Wash.	Dec. 13, '49	3,276,224	21
Relocation of 11.4 mi. section of U. P. R.R. and 13.1 mi. of highway	Utah Construction Co., San Francisco, Calif.	Jan. 16, '50	5,200,000	17
Turbines for units 5-8	S. Morgan Smith Co., York, Pa.	Jan. 16, '50	4,954,000	0
Railroad track materials for Wallula Gap relocation	Colorado Fuel & Iron Corp., Denver, Colo.	Feb. 23, '50	991,462	0
Relocation of 11 miles section of railroad (S. P. & S.)	Utah Construction Co., Salt Lake City, Utah	Feb. 21, '50	1,548,000	16
Generators for units 5-8	General Electric Co., Schenectady, N. Y.	Mar. 23, '50	2,483,000	0

* Value over $500,000



SITE LAYOUT was affected by location of aqueduct shaft and main line railroad. Crib was located for purest available water.

Design by Contract: New York's Hudson River Pumping Plant

New York City's Board of Water Supply has been forced by a critical water shortage to develop an emergency supply. To get the job done quickly—without taking many of its men from their work of engineering tomorrow's sources of water—the board wrote Contract 427, an interesting and unusual document. It calls for design, construction, equipment and temporary operation of a Hudson River intake and pumping plant. Time and money were saved by letting out the design along with construction. Construction is already well along, with eight months the completion time and a bonus offered for bettering it. The design is complete, has BWS approval and is presented in this article. A later article will deal with construction.

—Editor

On March 15 Fuller Construction Co. and A. J. Dillenbeck, of Red Bank, N. J., signed a $2,084,000 contract with New York City's Board of Water Supply to design, build and test a 100-mgd pumping plant on the Hudson River near Chelsea, N. Y. The contract was awarded on the basis of preliminary plans by which the bidders "demonstrated to the board's satisfaction how they proposed to attack the problems of design and construction."

The contractors then engaged Charles T. Main, Inc., Boston consulting firm, to prepare engineering drawings and design details. As designs were finished, they got a BWS check, and construction began.

Information for Bidders

Here is what 17 bidders made their tenders on:

"Designs, construction and installations necessary to establish at shaft 6 of the Delaware Aqueduct, complete with all appurtenances and ready for use, a pumping plant capable of pumping 100 mgd of water from the Hudson River into the Delaware Aqueduct against a head of 600 ft, and a chlorinating plant capable of satisfactorily sterilizing the pumped water before it enters the aqueduct, together with suitable buildings for housing said plants; and for the operation of said plants for a period not to exceed four months subsequent to their completion."

There were alternates offered on operation of the pumps: Electricity or direct-connected diesel. The successful bidder was awarded the contract on the basis of electrical operation.

The Contract

Time is the prime consideration in this contract.

New York City's decision to tap the Hudson was made last Dec. 19. There followed this quick succession of events:

Jan. 9—The City's Board of Estimate approved allocation of funds for the project.

Jan. 18—The State Water Power and Control Board gave its sanction.

Jan. 25—Advertisements for bids on Contract 427 were published.

Feb. 20—Bids were opened.

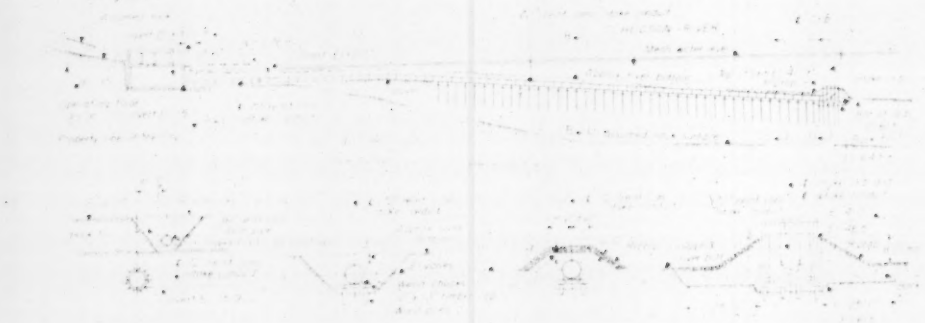
Mar. 15—The contract was awarded and the work order issued.

"The contractor shall commence the work . . . within 10 days after the service of a notice by the board to begin work, and shall complete the same . . . within 8 consecutive calendar months following service of said notice," says the contract.

Construction (clearing and excavation) began Mar. 20 and is due to be finished next Nov. 15. To insure completion of the work within the time allotted the contract states that:

"The contractor . . . shall pay for each and every day . . . that he shall be in default in completing the work to be done . . . the sum of $5,000 . . . not as a penalty, but as liquidated damages the city will suffer by reason of such default."

And to encourage the contractor



INTAKE CONDUIT—72 in. reinforced concrete pipe—will run from crib to pumping station, in a lined tunnel under railroad

to have the installation ready before Nov. 15, an unusual clause states:

"The city will pay to the contractor for such special advance delivery, the sum of $5,000 per day for each and every day . . . that the work to be done . . . is completed in advance of the time specified."

Specifications

"The intake crib shall be the submerged type, of heavy timber or concrete cellular construction . . ."

Timber will be used. A crib at Elev. 12—20 ft square in plan and 50.5 ft high will rest on 16 timber piles driven into the river bed. Top of the elevation must be 4.41 ft below mean water level. The river bed must be excavated below bottom of crib to El. 10.05 ft, then backfilled with a riprap paving after crib placement to 8 ft above original grade.

The exposed top 5 ft of the crib walls will have ports with gratings having clear openings not wider than 4 in. and a total open area of at least 200 sq ft.

Location of the intake is to be about 700 ft off shore in some 50 ft of water. It is required that

"The intake conduit shall be not less than 72 in. inside diameter . . . of reinforced concrete pipe, steel pipe lined and covered with concrete, or pipe of other materials of equal durability."

Reinforced concrete pipe at 72 in. dia will be constructed from crib to pumping station on timber pile bents for about 200 ft of the way. Where this conduit runs above invert bottom, it will be given 4.2 ft cover, at the topped with 2 ft of riprap. Elsewhere the pipe is to be in a trench, covered with at least 3 ft of backfill.

Pile bents will be pairs of piles capped by 42x12-in. timbers, spaced at 11.5 ft centers. Beyond the piles, the conduit will be supported on gravel fill.

Once ashore, the conduit must be passed under nine railroad tracks of the New York Central Railroad, without interrupting traffic.

"Substructure of the pumping plant shall be located approximately as shown on the contract drawings."

The plant is to be placed just about as the contract drawing showed it—within the property owned by the City of New York at Delaware Aqueduct Shaft 6. This property is bounded by the New York Central's cut-stone right-of-way and extends back from the river 725 ft to a highway connecting the villages of Chelsea and Wappinger Falls. Shaft 6 is the only surface feature.

"The south end of the substructure shall consist of an inlet waterway and a dilution basin . . . a combined area of not less than 8,000 sq ft."

As built, the intake conduit will enter the pumping plant substructure at its north end, flow through the plant will be north to south.

The 72-in. conduit, with invert at substructure floor level—15 ft—will enter through a sluice gate well having stop log slots and a 6x6 ft square sluice gate which will permit dewatering of the entire substructure. The stop logs will permit dewatering of the well for sluice gate repairs.

Beyond the sluice gate, flow will diverge into three separate channels, each containing a trash rack and traveling screen. Stop logs are to be provided at both ends of each channel so that any one channel can be dewatered for maintenance while the other two remain in operation.

Converging into a single channel after screening, the flow will be chlorinated, then passed through a series of six round-the-end baffles for dissipation prior to the pump-room substructure.

"The remaining area of the substructure shall contain a pump well."

There will be three separate pump wells, each 17x25 ft in plan and 24.1 ft deep. Sluice gates will control separate 3x3.4 ft openings in the substructure wall between the diffusion chamber and each pump well. An overflow weir with crest 22 ft above substructure drop level is to prevent flooding of the building. A 3 ft drain will lead from the weir to a drainage sump, then out of the building and back into the river.

"A superstructure of semi-permanent construction shall be constructed to satisfy the housing requirements of the pumping plant and all its appurtenant equipment."

The pumping plant will be a steel frame building with insulated corrugated steel siding and an insulated, corrugated steel roof deck with tar and gravel roofing. With outside dimensions 155x72 ft, the building will be U-shaped in plan with both screen house and pumphouse wings extend-

ing westward toward the river. It is to be a one-story building above substructure, but story height will vary at the pumphouse end, increasing to accommodate the 15-ton traveling crane needed to handle pumps and fittings.

The central portion of the building connecting the wings will house the diffusion chamber in its substructure. On the operating floor level will be a large (60X26-ft) room for chlorine storage, equipped with a monorail for handling the chemical in drums. Space is to be provided for 30 one-ton containers.

Other space in this section of the building will be devoted to tool and equipment rooms, storage, toilet and lockers. The boiler room for heating the building will be at the rear of the screen house wing.

The open area between the wings of the building is to be for truck unloading. That portion of this area between the building wings will be concrete roof slab over the diffusion chamber. Grade will be at El. +11, operating floor level will be El. +15.

"Pumps shall be of the centrifugal type with either vertical or horizontal shaft."

Six vertical centrifugal pumps, each with 20 mgd capacity under a head of 680 ft, are to be installed in the pump house. This will permit one to stand by while the plant pumps 100 mgd.

A 20-in. cone-type check valve, a tee branch with a 10-in. surge suppressor and 24-in. motor-operated gate valve will be installed in that order between each pump and the discharge header. Controls are designed for pressure regulation and surge suppression in the event of power failure.

"Motors may be either synchronous . . . or squirrel cage induction."

Six 2,500-hp synchronous motors will operate at 900 rpm on 60-cycle, 3-phase current at 4,160 volts.

"A welded steel pipe pump discharge conduit . . . shall be furnished and laid."

The discharge header within the plant at El. +20 will gradually increase in diameter from 24 in. at the first pump to 54 in. at the fifth. Passing through the plant's east wall it will be a 54-in. welded steel pipe with 2-in. thick walls designed for 1,000 psi under a 680-ft head.

It will be laid in a trench on an 8-in. bed of sand for the 670-ft length from pumphouse to shatthouse. A Venturi meter, with head loss not greater than 18 in. for 100 mgd flow, will be installed in the discharge line to measure flow in the 10- to 150-mgd range.

At the shaft house, 100 ft above the Delaware Aqueduct, the 54-in. discharge pipe will divide into two 36-in. lines in order to approach the shaft cap from two sides and thus equalize thrust effect. There are existing 36-in. bronze gate valves on opposite sides of the shaft cap to receive the two new lines. Outside of these gate valves new 36-in. cone check valves will be installed, and a 16-in. pressure relief valve will be included to handle any sudden surge. Alterations at the shaft will be kept to the minimum, and care will be taken to introduce no appreciable unbalanced loads on the shaft cap.

"An outdoor type substation . . . shall be furnished."

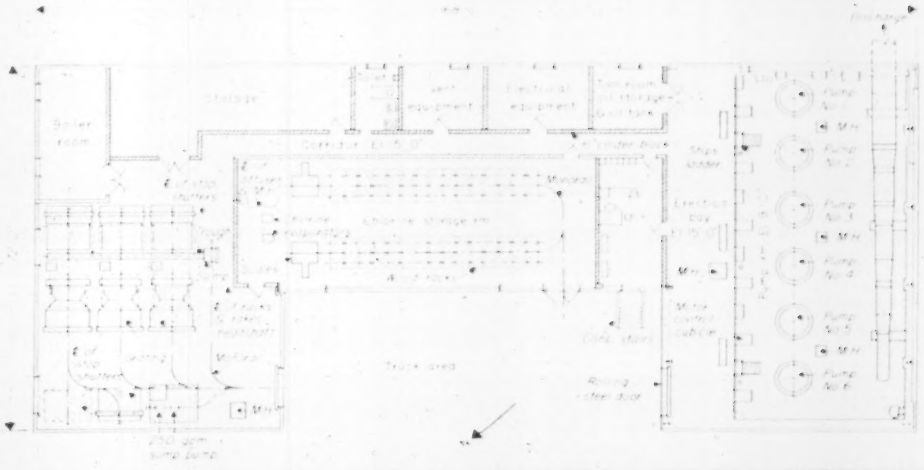
The switching structure must have accessories for deadending the three 13,000-volt incoming wires and transformers to cut this primary voltage to the motor voltage. A small, semi-permanent building of some 300 sq ft will house the storage battery and miscellaneous equipment at the electrical substation.

The substation is to be located about 250 ft southeast of the pumping plant with underground conduits connecting the two.

"The contractor shall build a 12-ft wide bituminous macadam access road."

A road not to have grades exceeding 7% must be built. It will lead down the hill from the highway which passes close by the 65-ft house to the pumping plant, with access to the substation and ample parking area. Chlorine shipments are expected to come by highway, so unloading and turn-around space is to be provided for trucks.

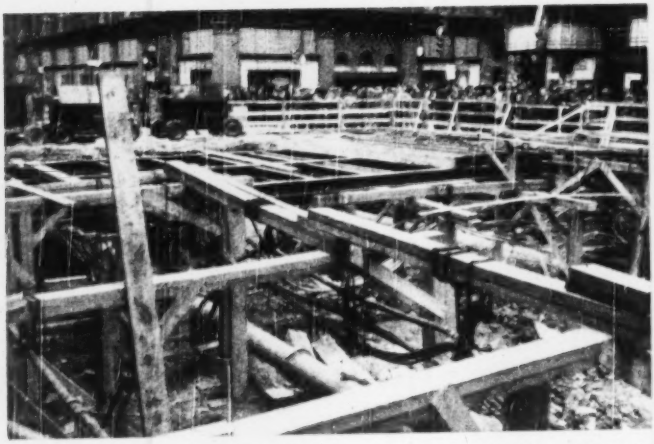
G. R. Rich was in charge of design work for Charles T. Main, Inc. For the Board of Water Supply, designs were reviewed and checked by Walter J. Grass (plant layout and structures) and Frederick G. Switzer (mechanical and electrical equipment). Tom Eide is department engineer, and John M. Fitzgerald is chief engineer of the board.



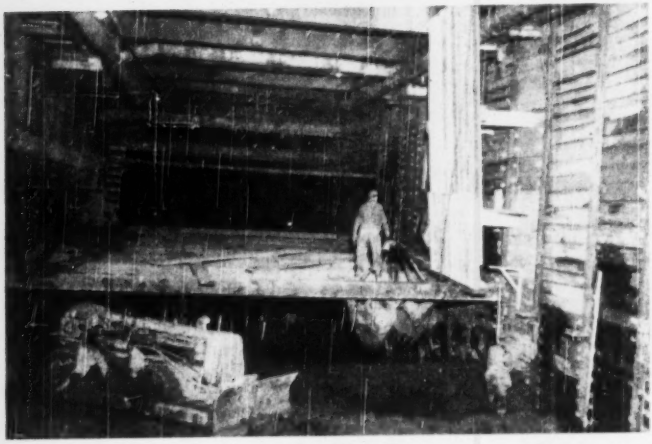
OPERATING FLOOR of pumping station will have intake controls and screens, chlorination equipment and storage, and pumps.

Construction—

Canada's First Subway



1 TORONTO'S YONGE STREET traffic capacity drops to zero so subway for 40,000 people hourly can be built. Maze of timbers carries maze of utilities exposed by cut-and-cover subway's initial excavation. Only one block opened at a time.



4 BULLDOZER FEEDS CLAMSHELL that loads trucks on street above. This is the intermediate-level cut. Bracing is required because soil outside is loosely compacted, thus placing extra load on the H piles used as main supports. Ground conditions vary throughout job, with little rock and negligible water.

5 REINFORCING STEEL unloaded from truck for delivery below-deck to box section of subway. Deck will be replaced with concrete slab.

As CONSTRUCTION nears the one-year mark in Toronto's four-year program to build the first subway in Canada, it is possible to present these pictures of important work stages.

Location is in Yonge St., the city's main north-south commercial route. Three miles of two-track subway will run in a reinforced concrete box section of rigid frame design. The line will extend another mile and a half in open cut.

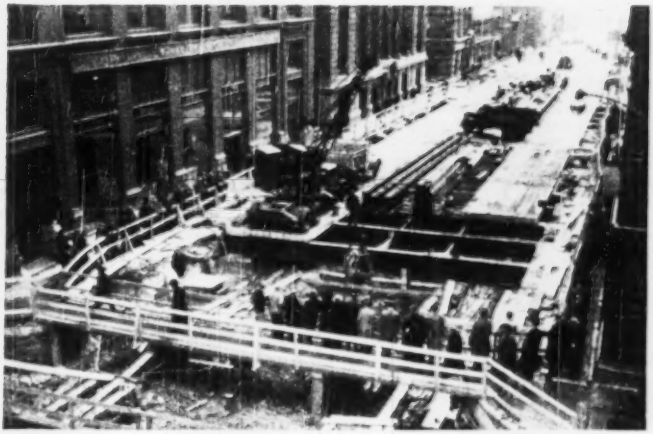
The subway is to replace two trolley lines having one-way hourly capacity of 18,000 passengers. The new facility will increase this to 40,000.

In addition to being Canada's first underground railroad, Yonge St. subway is the first of two lines planned by the Toronto Transportation Commission, and coordinated with the plans of the City Planning Board. The initial system also includes an East-West 4-mile line. Work on the second line is not under way.

Total cost of the Yonge St. subway is estimated at $40,000,000. $10,000,000 having been contracted in July, 1949, for the first mile of underground work. A second subway section was let in May for $7,000,000. Construction will be complete in 1953.

The most difficult construction probably is encountered in the first contract section because it encompasses Yonge Street's most heavily built-up stretch—inland from a point near Lake Ontario.

Work is cut-and-cover, in earth. Construction consists of: 1. Driving H piles along right-of-way lines; 2. excavating initially for a steel and timber deck to be supported by the piles; 3. tying up underground utilities to the deck; 4. excavating for the subway between H pile lines—lagging is placed between H piles as digging proceeds; 5. placing the structure.



2 TRAFFIC RESTORATION proceeds as quickly as possible, as steel and timber deck is placed over initial excavation. Beam loads will be transferred from cribbing to H-piles driven as much as 40 ft deep in hand-excavated trenches on right-of-way lines. (Shallow trenches exposed utilities, to prevent damage by piles.)

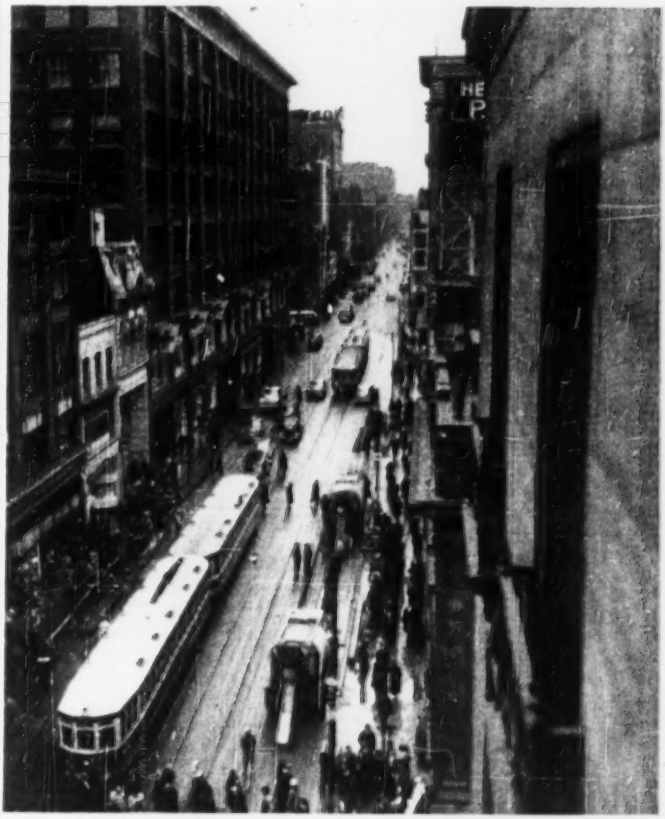
3 SHOVEL WORKS FACE for primary underground cut. Truck-access ramps were built to side streets at 2,000-ft intervals.

6 FIRST CONCRETE goes into subway floor slab. Concrete is dropped, from truck at street level, into hopper and elephant trunk.

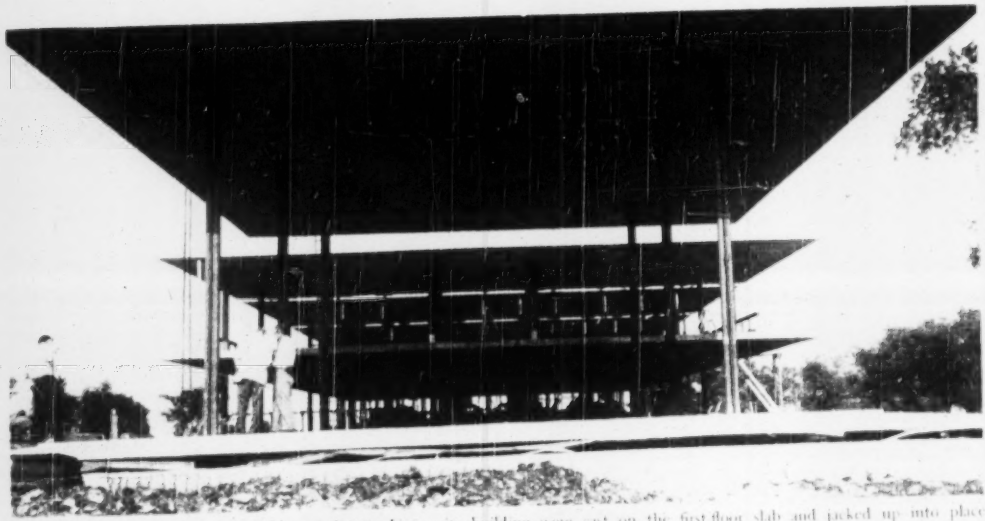
Future work involving 1½ miles of open-cut work will have steel or concrete bridges for cross streets.

Chief engineer for the Toronto Transportation Commission is W. H. Paterson; H. C. Patten is general manager. Contractor for work pictured here is a syndicate made up of C. A. Pitts, Toronto, Arthur Johnson Corp., Long Island City, N. Y., Johnson, Drake & Piper, New York, and B. Perini & Sons, Inc., Framingham, Mass. Charles B. Molineaux is general manager for the syndicate.

Contractor for the second section is Rayner Const. Co., Leaside, Ont.



7 TRAFFIC RESTORED—Trolley lines that carry a maximum of 15,000 people an hour resume operation on timber-decked street. Single lanes outside car tracks leave little room for vehicles and construction equipment. Truck shown delivering concrete through deck. Subway cut width is 32½ ft, 52 ft at stations.



CONCRETE ROOF and second floor of Trinity University building were cast on the first floor slab and jacked up into place

Building Raised by Its Boot Straps

Nearest approach to lifting in the boot straps is the method of erection used for a two-story classroom administration building at Trinity University, San Antonio, Texas. The reinforced concrete slabs for the second floor and roof of the 61x384-ft structure were cast on top of the ground floor slab. Then, they were raised (they were 75x66-ft sections weighing 168 tons) by jacks on the columns.

This method is estimated to have saved $0.34 per sq ft of floor area.

The building contains 27 classrooms, mostly 24x24 ft, located in the center portion and separated by stairs and toilets from offices at both ends of the structure. It is of flat slab construction with 8-in. steel box columns.

The columns were formed by welding two 8-in. angles together and were filled with concrete. In the longitudinal direction, they are spaced 24 ft apart and in the transverse direction 54, 32 and 24 ft on centers. There are two cantilever overhangs, one 8 ft long and one 5 ft long, on the long sides of the building.

The column consists of 2-ft 0-in. high spandrels and 8-ft 0-in. high continuous steel rods. The spandrels are insulated. Coiled aluminum panels 8 ft high and 1½ in. thick will be attached to the concrete floors to close the floor openings 11 ft 8 in. and 8 ft 0 in. high.

• **Slab design**—The first floor, cast on sand and gravel, is 8 in. thick and is finished with asphalt tile. The second floor slab is 9 in. thick. It has an asphalt tile finish on top and an acoustical tile ceiling on the underside. Also with an acoustical tile ceiling underneath, the roof is an 8-in. slab with 2-in. vermiculite insulation and built-up roofing on top.

The floors and roof were made of 3,000-psi concrete, with rock gravel coarse aggregate and round sand and crushed pea-gravel fine aggregate. Reinforcing steel ranges from ⅜ to 1-in. dia and is spaced evenly across column and middle strips.

• **Bottom forms eliminated**—First step in erecting the building was to place the columns on prepared pedestals, anchor and grout them. The first slab then was cast. When it had hardened, the second-floor slab was cast on top, the first-floor slab being covered with 15-lb phelt impregnated paper to prevent bond. The concrete was placed in sections 75 ft wide (including the wings) by 46 ft long. Only edge forms were needed. To enable the slab to be lifted later, a steel casting designed to slide on each column was cast in the slab.

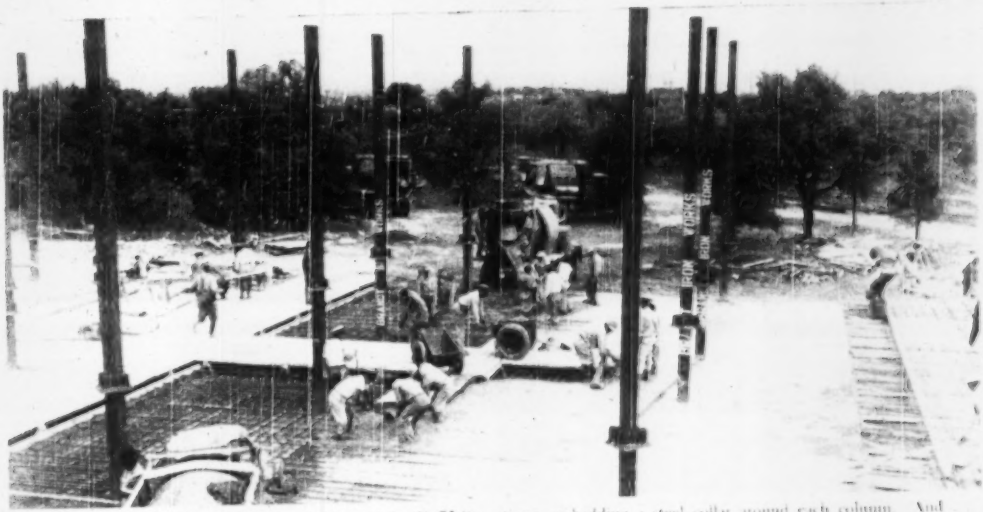
When the second slab had set, separating paper was placed over the surface and the roof cast on top. Again, a steel casting sliding on each column was embedded in the slab.

• **Jacks lift 168-ton slabs**—After curing for 7 to 10 days and attaining 3,000-psi strength, each section of floor or roof was lifted by hydraulic jacks placed on top of eight columns. The jacks were actuated by a pump operated by a 10-hp motor. Each jack had to lift 21 tons of the 168-ton load. Under favorable conditions, one slab was raised to second-floor height in 5 hr 30 min. Maximum rate of lift was 36 to 42 in. per hr.

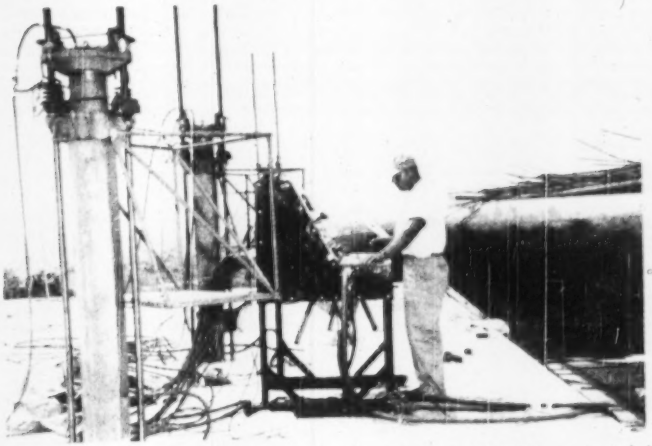
The weight was supported on two threaded steel rods (rack screws), each 12 in. dia, attached to the steel castings embedded in the slabs. The hydraulic jacks, which are now obsolete because of recent improvements, raised the slabs in small increments. When being retracted for another lift, the jacks automatically shifted the load to their bases, which were seated on top of the columns.

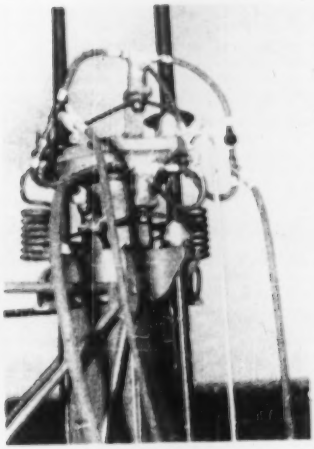
The operation was controlled by a man at a panelboard, which registered the pressure in the hydraulic system and the relative height of the slab. It could set the elevation of the slab at each column within 1/16 in. When a slab reached its permanent position, 5 and 6 in. centers by 1 in. thick steel seat blocks were placed against the underside of the column collars and welded to the columns. Then the steel castings were welded to the columns.

Framing and lifting schedules were dovetailed to get maximum use of the

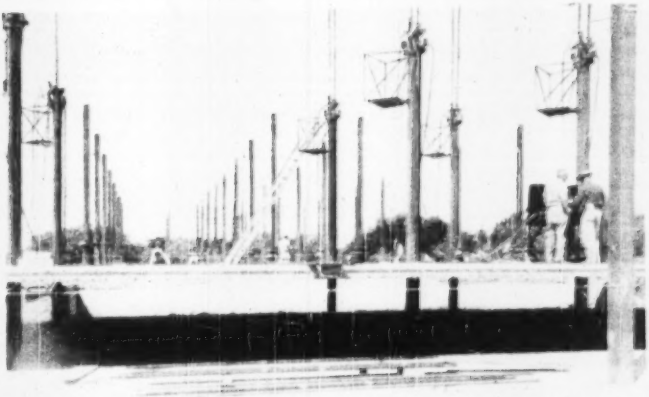


SECOND FLOOR, and later the roof, was cast in 40x75-ft sections, embedding a steel collar around each column. And





A MAN AT A CONTROL PANEL after the concrete tested 3,000 psi operated the hydraulic jack atop each column. Thus



SLABS WERE LIFTED by threaded bars and finally the collars were welded to the columns. (James Stewart & Co. photos.)

plastic impregnated paper, which had been purchased in quantity sufficient to cover only 50% of the lifted area.

• **Method saved money**—The cost of lifting and setting the slab is estimated at 30¢ per sq ft. On the next job, it probably will be brought down to 25¢ per sq ft. Comparison of fixed-price bids indicates that the method saved the owner $24,000.

The equipment is capable of raising two or more floors at a time. For example, for this building the roof could have been raised 11 ft 2 in. above the second floor slab, when the latter was still on the ground. Then, the threaded bars could have been attached to the second floor slab and both slabs lifted together another 11 ft 3 in. to their final position.

• **Developers**—The erection technique was conceived by Philip N. Youtz, New York architect, and Tom Slick, San Antonio, Texas, businessman. It was developed by the Institute of Inventive Research, a non-profit organization for furthering development of inventions, and its affiliate, Southwest Research Institute, which conducts research for industry. Under supervision of IIR, Southwest supplied testing facilities and engineering personnel. Concurrently, IIR handled details of the licensing program and studies of applications of the method.

The classroom-administration building for Trinity University cost $279,564, including electrical, mechanical and heating installations. It was designed by architects Harvey P. Smith, Bartlett Cocke and O'Neil Ford, of San Antonio, Texas. William W. Wurster was consulting architect. Frank T. Drought was structural and mechanical engineer, and Fred N. Severud was consulting structural engineer. Gassner Aircraft Engineering Co. was consultant on the hydraulic system.

James Stewart & Co. was the general contractor, all phases of the work being directed by Roger Peabody, vice president. The slabs were lifted and set in place by the Texstar Corp.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York author of Legal Phases of Construction Contracts (McGraw-Hill)

Construction of Contracts

The practical interpretation given to their agreement by the parties to it, while they are engaged in its performance, and before any controversy has arisen concerning it, is one of the best indications of their true intent, and courts that follow it will rarely go far astray.[1]

Where the parties proceed in the performance of the contract as though it had a certain meaning and that meaning is not entirely inconsistent with the wording of the contract, it should prevail.[2]

Where the parties have reduced their agreement to a writing, their intention is to be determined from its language and not on the basis of any intention either party may have secretly entertained.[3]

Contracts are to be construed so as not to place one party at the mercy of the other, or reach a result which the parties could not have contemplated and hardship and injustice are not deemed to have been intended.[4]

Where the language of the contract is unambiguous, the court will not substitute some other agreement for the one which is clearly expressed.[5]

In determining whether or not there is an ambiguity requiring an interpretation by the court the whole contract must be considered and not an isolated part.[6]

(1) Smyth v. Board of Commissioners, etc., 82 F. Supp. 338.
(2) Craig v. Thompson, 177 F. 2nd 457.
(3) Dobinson v. Haverno, 69 A. 2nd 163.
(4) Pioneer Credit Corp. v. San Miguel, 95 N.Y.S. 2nd 328, 275 App. Div. 636.
(5) Shanks v. Wilson, 86 F. Supp. 782.
(6) Shipley v. Pittsburgh & L. E. R. Co., 82 F. Supp. 722.

Owner and Subcontractor

As a general rule, the party for whom the work is being done has no right of action against a subcontractor for breach of the contract as there is no privity of contract between the parties.[1] The subcontractor, for the same reason has no right of action against the owner. He must look for payment to the one who promised to pay him.[2]

(1) Majestic Mfg. Corp. v. L. Rice & Sons Inv. Co., 27 N.Y.S. 2nd 31, affirmed 261 App. Div. 1059, 27 N.Y.S. 2nd 846.
(2) Nickel v. Dollar, 129 F. 2nd 160.

Charging Prices in Excess of Those Fixed by Law

A contract was entered into between the contractor and owner for the erection of a building on a cost plus basis. During the progress of the work the contractor submitted bills for materials and labor, which were approved by the architect and paid by the owner.

Upon the completion of the work the contractor submitted bills for additional labor and materials furnished, which the owner refused to pay, contending that some of the charges made were in excess of the prices fixed by the Emergency Price Control Act and this made the contract illegal and the contractor was not entitled to recover anything. The trial court sustained the owner's contention. This determination was reversed by the appellate court which held that the contract as entered into was legal and the fact that the contractor made excessive demands did not make the contract illegal. The contractor was held to be entitled to recover the balance due for materials furnished and labor supplied at the prevailing rate and not the amount actually paid by him if it exceeded the legal rate. As to the amount already paid by the owner, the court held that the excess over the prevailing rate should be deducted from the amount finally determined to be due the contractor.[1]

(1) Hammel et al. v. Hutner et al., 95 N.Y.S. 2nd 68 (Appellate Division of Supreme Court of N.Y., Feb. 20, 1950.)

Additional Compensation

The general rule is that a promise to pay a contractor additional compensation for doing work called for by the contract is unenforceable because there is no consideration to support the promise. "Where the contractor can justify his refusal to proceed with the contract by showing that he is confronted with circumstances not contemplated when the contract was made which render its performance impossible or unduly onerous and the promisor, being informed of the situation, induces him by a promise of additional compensation to proceed with it, the contractor's right to that compensation ought justly to be recognized."[1]

In some cases the agreement will be enforced on the theory that the other party waived its right to have the work done at the contract price.[2]

It is important to note that in some jurisdictions statutes have been enacted whereby a contract may be changed or modified by a written instrument "signed by the party against whom it is sought to enforce the change, modification or discharge or his agent" and the same will be enforced even though made without consideration.[3]

(1) Dahl v. Edwin Moss & Son, 69 A. 2nd 567 (Supreme Court of Errors of Connecticut, Nov. 17, 1949.)
(2) Grand Trunk Western R. R. Co. v. Nelson, 56 F. 2nd 336, 337 2nd 872.
(3) Watkins & Son, Inc., v. Carrig, 21 A. 2nd 591.
(4) Section 31 of New York Personal Property Law.

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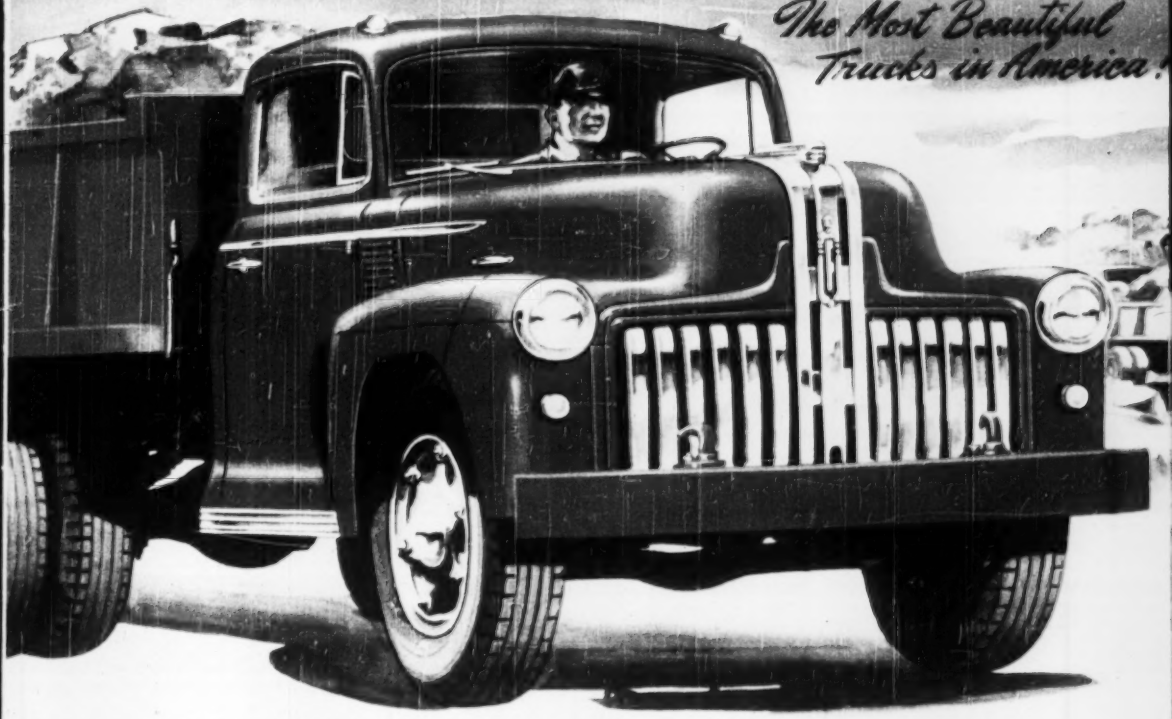

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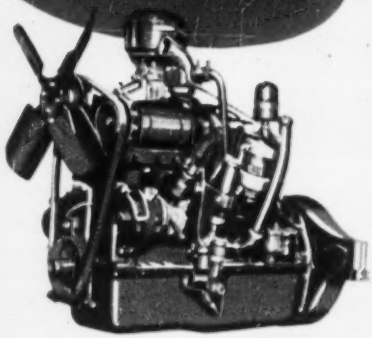
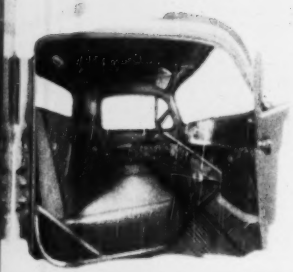
- ★ Rubber bushings in front springs and shackles provide quieter operation—longer spring life.
- ★ Heavy duty, wider track front axles for shorter turning radius.
- ★ Spring cushioned radius rod drive gives longer spring and axle life.
- ★ Built-in running boards with tool and battery compartments in step-wells for greater convenience.
- ★ Husky hypoid rear axles—the strongest ever built for the toughest handling jobs.
- ★ Pressurized cooling and increased radiator frontal area assures maximum engine performance.
- ★ Cabs have heavy duty chrome plated hardware. Doors are equipped with three heavy duty hinges.
- ★ Propeller shaft designed for maximum angle drive to rear axle. Shaft center bearing is rubber mounted for quiet, long life operation.
- ★ Big, sturdy brakes with wide lining area—stop quickly—operate cooler—last longer.
- ★ Powerful clutches with larger facing areas assure positive engagement—dependable service.
- ★ Heavy duty 4 or 5 speed transmissions of ample torque capacity for—quiet operation—easy shifting.



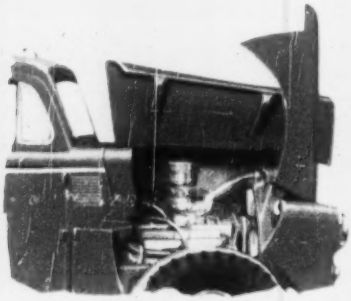
BIG, POWERFUL ENGINES

These husky, all-truck Federal engines are designed for maximum operating economy and dependable, long-life performance.



GREATER COMFORT, ROOMIER CAB

Seats accommodate three large men easily and are readily adjustable. Cabs are double insulated for all weather protection.

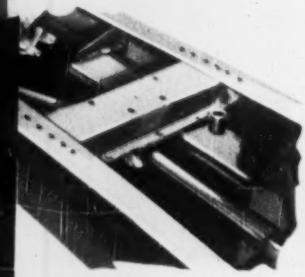


100% GREATER ACCESSIBILITY

New, exclusive "Swing-Lift" fender simplifies maintenance on engine, steering, front brakes, etc.—reduces down time—cuts repair costs.

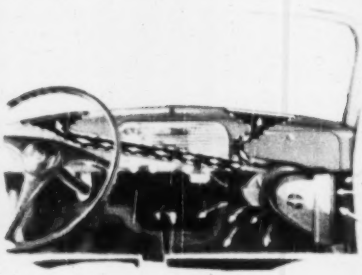
60% GREATER VISION

One-piece, full-width, curved safety glass windshield insures maximum visibility—eliminates distortion. Dual electric windshield wipers standard equipment.



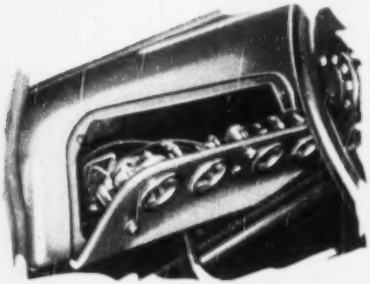
30% GREATER STRENGTH

Massive, sturdy frame side rail dimensions substantially increased and cold riveted for maximum strength and durability.



ALL-WEATHER AIR CONDITIONING

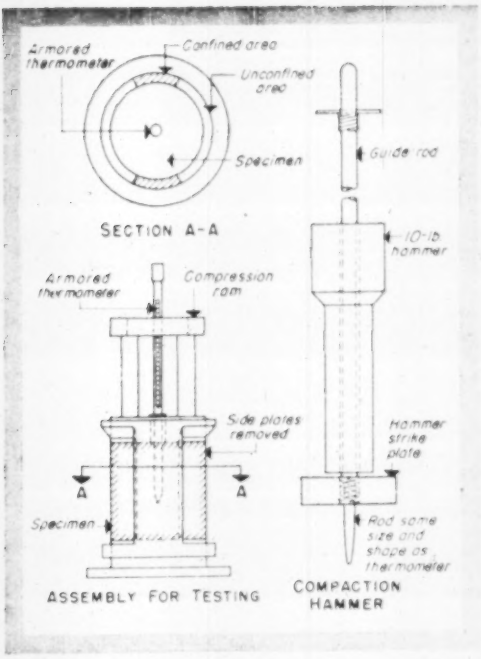
Fresh air heater and defroster is available with cowl intake vent, thermostatically controlled for all weather driving comfort.



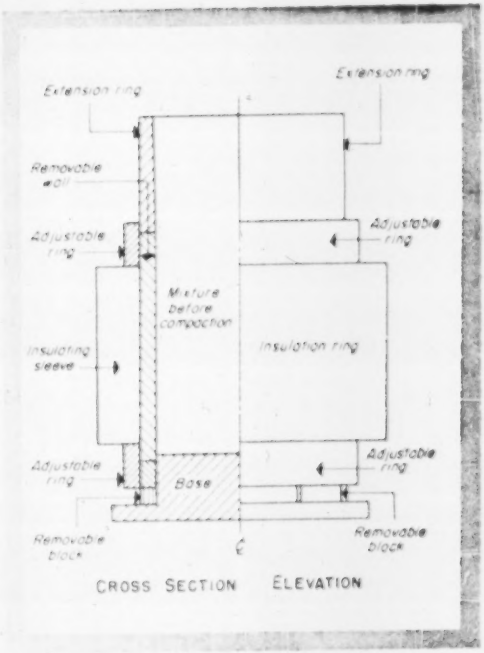
ACCESSIBLE WIRING PANEL

Electrical wiring under cowl is readily exposed by opening a door in instrument panel. Wires are colored for easy tracing of circuits.

FEDERAL TRUCKS



TEST APPARATUS designed for use in making quick stability test of asphaltic concrete at the hot mix plant.



DURING MOLDING, the specimen is protected from rapid heat loss by an insulating sleeve placed around the mold.

Rapid Stability Test Devised for Asphaltic Concrete Mixes

APPARATUS for making stability tests on asphaltic concrete mixtures right at the hot mix plant in a few minutes time has been developed at the Iowa Experiment Station.

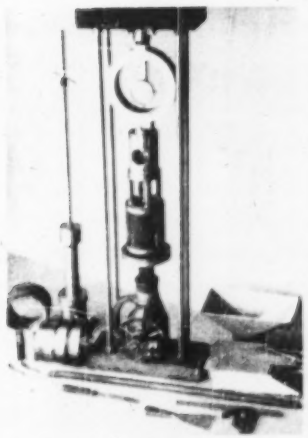
This apparatus, still in the development stage, was described in a paper at the Highway Research Board meeting by M. G. Spangler, research professor, and Ting Yu Chu, research associate, Iowa State College.

Specimens are 4 in. high and 4 in. in diameter. The test mold is used for both molding and testing, thus eliminating the time lost normally in cooling the assembly, extruding the specimen, and reheating the specimen to specified temperature before testing.

Before molding, a sample of about 1,850 grams is placed in an insulated weighing pan and covered with thick cardboard. A thermometer is inserted through a hole in the cover, penetrating to the center of the sample. When the temperature has dropped to 260 deg. F. the molding starts.

After the mixture has received 50 blows from the 10-lb hammer dropping from a height of 18 in., the compression ram, together with the armored thermometer, is placed on the specimen, and a static load of 1,000 psi is applied for one minute. The combined height of specimen, ram and base plate is measured to 0.01 in.

The tentatively specified 50 blows with a 10-lb hammer followed by 1,000-lb static load gives a density a little higher than that obtained in the pavement right after compaction.



COMPLETE EQUIPMENT—The partly confined specimen is here shown under the compression test.

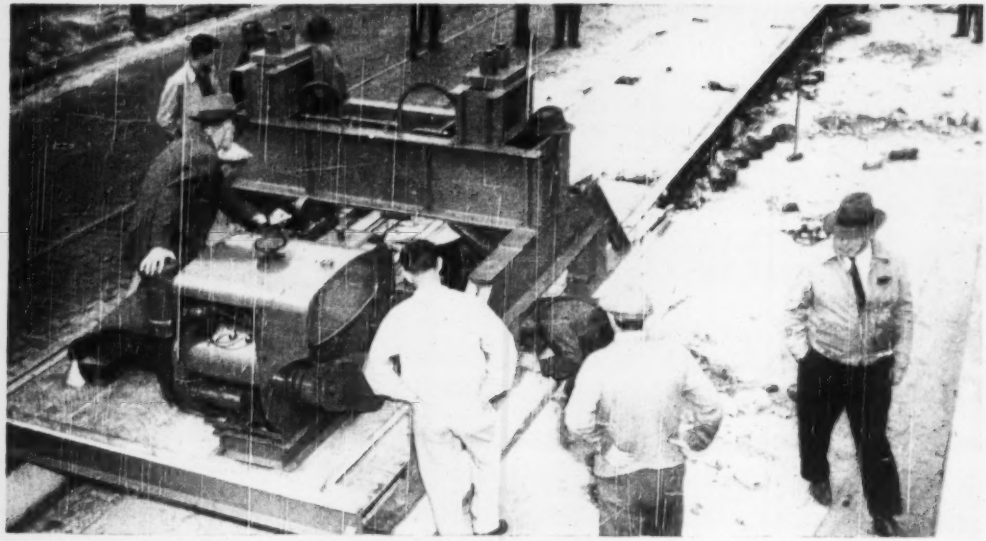
When the temperature of the specimen has dropped to 170 deg. as indicated by the armored thermometer, the attachments to the mold are removed and the specimen is ready for testing. As the removable side plates are taken away in this operation, the specimen is in a semi-confined state, with only a limited amount of side support remaining to simulate the side support received in the pavement.

The compressive load is applied when the thermometer reading drops to 160 deg., speed of testing being 0.2 in. per minute. The maximum reading on the proving ring is recorded and its equivalent load in pounds is termed the stability of the mixture. Investigation are being made to include flow characteristics of mixtures as an additional criterion for control.

Time from the beginning of molding to this stage is usually ten minutes.

After testing, the specimen is weighed and the density of the mixture computed. Since its temperature is still high, the specimen can be removed from the mold easily.

A discussion of the relation of this test to other well known stability tests is included in the Spangler-Ting paper. It will appear in the Proceedings of the Highway Research Board.



STRADDLING ABANDONED STREETCAR TRACKS, a skid-mounted puller speeds removal of rails from Chicago pavements.

How to Rip Rails Out of Pavements

OLD STREETCAR TRACKS—that annoy motorists and are driving hazards—are being pulled up at the rate of 1,000 ft a day by the Chicago Transit Authority. It is doing the work with a new-type rail puller that costs $1.50 to $2.00 per mile (both rails).

The machine not only speeds up a disagreeable job but also reduces the cost considerably. Rails are usually pulled out by hand jacks or by traveling cranes with tongs for rail attachment.

• **A rugged machine.** The rail puller, weighing 5 tons, consists of a fabricated steel frame from which are suspended two 12½-ton hydraulic jacks. The jacks have jaws for clamping to the rails.

The machine is mounted on steel skids under heavy wood beams to spread its weight. The skids are set just far enough apart to permit a pair of tracks to be raised between them. A truck drags the puller along.

Oil at 5 gpm and 10,000 psi is delivered to the hydraulic jacks by a gasoline-engine-driven piston pump. The jacks have a lifting rate of about 18 in. in one minute. They can be used on one or two rails.

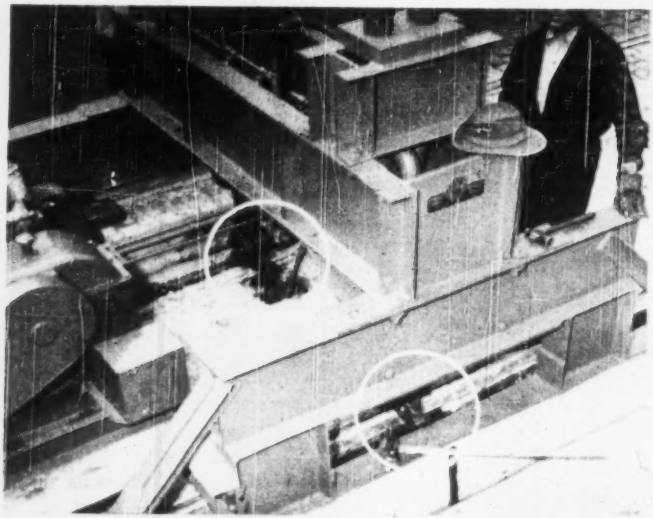
• **How it's done.** Small openings on each side of each rail are cut into the pavement at 10-ft intervals. Then the puller is positioned so that it straddles the tracks, the skids being set over the ends of the buried ties. The jaws of the jacks are clamped and locked to the rails in the pavement openings.

Hydraulic pressure is then applied. As the jacks rise, the rails come out of the pavement.

The weight of the machine and the pressure applied in lifting prevents ties and ballast from being pulled up with the rails.

Removed rails are cut up into short lengths and hauled to the Authority's equipment yards.

The rail puller was manufactured by the Rogers Hydraulic Co., Minneapolis, Minn. It was built to plans prepared by CTA engineers.



CLAMPED TO THE RAILS, powerful hydraulic jacks—suspended from the sturdy fabricated steel frame—lift at the rate of 18 in. per minute.

READER COMMENT

Building Economies

Sir: I was keenly interested in the Construction Trends article "New Buildings Pay Off" (ENR May 11, 1950 p 14). You and your staff are to be congratulated on another fine piece of journalism and bringing to engineers a fresh viewpoint on the relation of economics and engineering.

That new buildings pay off over old buildings is not limited to the industrial field—it is, I feel, equally true of other building fields such as warehousing and commercial.

D. L. Beegle
Consulting Engineer
Detroit, Mich.

Sewage-Treatment Report

Sir: In your abstract of our report on sewage treatment financing (ENR March 30 p 32), the name of one member of the committee was omitted.

Luther T. Fawcett, chief engineer of the Mahoning Valley Sanitary District, was a Chamber of Commerce member of the committee.

Frank W. Barton
Secretary, Citizens Committee on Sewage Treatment Financing
Youngstown, Ohio

Mr. Fawcett's name was inadvertently omitted from the list of committee personnel.—Editor

According to Plan

Sir: The paragraph, "Glass For The Glassless" (ENR May 11, 1950 p 17) suggests a misunderstanding of the idea back of the "windowless" factory at Corpus Christi. Both this paragraph and your original article (ENR Nov 24, 1949 p 42) have been very misleading to your readers.

In the original article the title, pictures and the context give the impression that there are virtually no windows or walls in the plant; and now your latest paragraph seems to infer that we were all wrong in our judgment, have found the climate too windy and are therefore about to enclose the entire plant with windows for protection against the wind.

The real facts in the case are these. In designing a food processing plant which, by the nature of its process, produces dust explosion hazards, dust decay problems and acid fume problems, it was the thought of the original committee set up by the owners, as well as the design engineers, to take advantage of the mild climate and eliminate these difficulties by leaving the buildings open so that the wind would carry the dust and fumes away.

Knowing that if the buildings were enclosed to start with, the walls would probably never be removed, it was decided to omit the walls, but to provide the structural framing so that enclosures could be added if operating conditions, after a year's experience, would so dictate.

The factors were not all known at the time of design because at least two portions of the process were entirely new and had never been used in any other plants of this kind. While some of the buildings were left open, the process was closed weathertight to eliminate bugs and sand.

Even from the beginning, all offices, toilet and locker rooms, laboratories, electrical control rooms, instrument rooms, machine shops, storage buildings, stairways and elevator shafts, scale house, packing and bagging rooms and the turbine and engine rooms were enclosed. The past year of operating experience has indicated that it is difficult to maintain proper working temperatures in the sugar crystallizers during extremely cold weather. Therefore, most of the walls of that building will probably be enclosed, and there are several other small areas in which it has been found desirable to give some protection from the wind.

All of this is in accordance with the original plan and in no way deviates from it. We firmly believe that operating experience is a much better basis on which to determine such things than haphazard guessing. There are still vast areas of the walls of this plant which will be left open. In these areas the design assumptions have been justified by operating experience.

R. J. Winters
Chief Engineer
The H. K. Ferguson Co.
Houston, Texas

A Correction

Sir: Somewhere in the process of getting my article on "Graphic Methods for Determining the Widening of Navigation Channels at Bends" into type an error was made with respect to setting channel markers. The published text says they are set by the Coast and Geodetic Survey. They are set by the U.S. Coast Guard.

T. G. Thorgeson
Engineer, Jacksonville District
Jacksonville, Fla.

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SINCE 1902
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ALL TYPES
FINE WORKMANSHIP
AND SERVICE
at Competitive prices!
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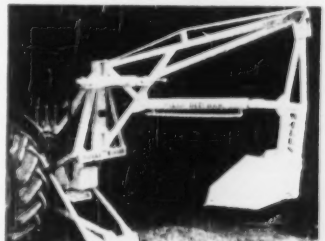
Write for Catalogs and Estimates



New! *Fast Operator for the small jobs!*

WILLS DITCHER
$465.00 F.O.B. Topeka, Kan.

Ideal for footings, sewer lines, culverts, water lines, drainage ditches, laterals, etc.

Digs 10" to 20" width ditch approximately 50 linear feet per hour.

Maximum depth, 5 ft., but with additional depth kit will dig to 7 ft.

Can be installed easily on any Ford, Ford-Ferguson, or Ferguson Tractor.

• Save labor . . . time . . . money. Write for free folder and name of your nearest dealer.

WILLS MOTOR CENTER
1947 North Topeka Dept. E. Topeka, Kansas

DEVELOPMENTS ABROAD

Bridge across Blue Nile Ethiopia's biggest job

It is probable that the biggest construction project in Ethiopia during recent times (apart from the oil exploration project of Sinclair Petroleum in the Ogaden province) is the new bridge across the Blue Nile (Abbai River) now nearing completion. It is of the "Melan" (arch) type construction. Its length is 670 ft., with a road bed of 32 ft. The main span is of steel construction and is anchored in rock on both banks. Cost when finished has been estimated at $1,000,000. Work on the bridge was begun in 1947, and is expected to be finished this year, thereby connecting the two important provinces of Shoa and Gojam, which are completely isolated from each other during the floods caused by the big autumnal rains. Efforts are being made to complete the bridge before the 1950 rain period.

Foreign Briefs

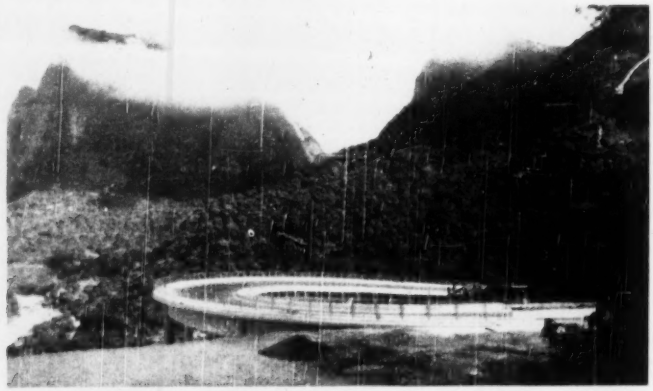
Iranian cement A modern cement plant is being constructed at Shiraz, Iran. It is designed to produce 200 tons daily, to double the national production. For the first time, it will provide Persian builders with locally produced, high quality cement. Electrical equipment for this project and for the electric power plant of Teheran is being supplied by the Westinghouse Electric International Co.

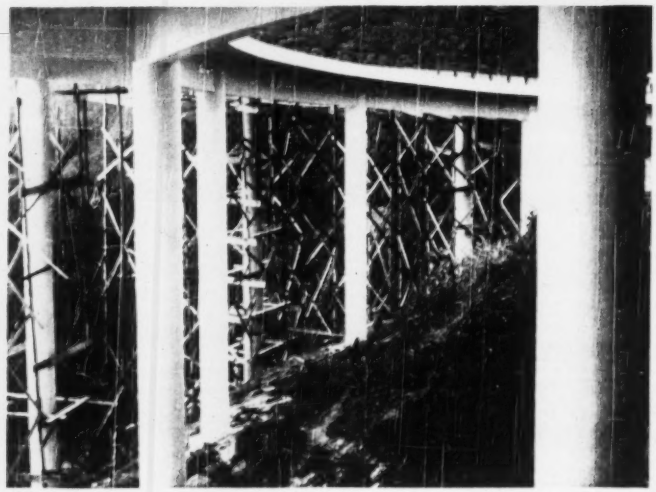
Marshall Plan help Nearly a billion dollars worth of modern machinery has gone into Marshall Plan countries in the last two years under the Economic Cooperation Administration's program to restore industrial and agricultural production in western Europe.

Santo Antonio Hill removal A $28,500,000 contract has been let for the razing and removal of Santo Antonio Hill in the center of Rio de Janeiro, as described in ENR March 16, page 45. Awarded the contract was Companhia Constructora Brasileira de Estradas (associated with Estacas Franki S. A. The hill is 219 ft. high, covers 67 acres and is estimated to contain 6,500,000 cu. yd. of material, 80 percent earth and 20 percent rock.

Rio-Sao Paulo highway To speed the completion of the Rio de Janeiro-Sao Paulo highway before the close of this year, President Dutra has authorized the Bank of Brazil to make $20,000,000 available to the National Highway Department in eight $2,500,000 monthly installments. Lack of funds has been delaying construction.

International airport Direccion General de Aeronautica Civil is proceeding with studies for the international airport at Bogota, Colombia. It will be built a little further from the city than the present airport at Techo. It will have two runways, each almost two miles long and almost 1000 ft wide. Cost is estimated at about $7,500,000. Experts say that the airport will be usable by DC-4's, DC-6's, and Constellations.





CIRCULAR VIADUCT ON RIO ROAD—To eliminate switchbacks which would have to be excavated in rock on a climbing mountain road in the southern outskirts of Rio de Lucino, Brazil, a spiral-curved, almost semicircular, concrete viaduct was used effectively. Jutting out over the brow of a hill, it extends 330 ft in an arc of approximately 100 ft radius. In this distance it climbs 28 ft.

The deck, 33 ft wide, accommodates a 23-ft roadway with a 2-ft super-elevation and two 5-ft sidewalks. Supporting bents set on the radial lines are 23 ft apart longitudinally. The tallest rises 51 ft above the hillside. Each bent consists of two 40-in. dia. circular columns and an 18x60-in. crossbeam. Main longitudinal members connecting the bents are of the same dimensions. Other floor framing consists of floorbeams at 5-ft centers and a single longitudinal stringer under the centerline of the roadway.

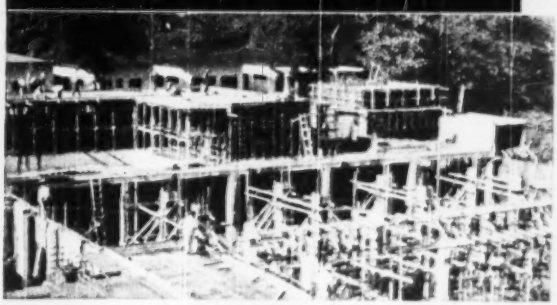
The viaduct is the outstanding feature of a 3-mile highway that extends from sea level at the Gavea golf course over a pass at El. 1320 to the suburb of Gavea Pequena. The midpoint of the viaduct is at El. 894.

Design and construction of the entire project was directed by Luis Onofre Pinheiro Guedes, chief of the Rio highway department.

Estimated Forming Material Costs —$80,000.00*

UNI-FORMS did it for $43,251.40

UNI-FORMS saved $36,748.60



TUBERCULOSIS HOSPITAL, Rio Piedras, Puerto Rico
ARCHITECT: Isador Rosenfield
CONTRACTORS: Mendez, Grillasca, Nolla, Galib and Marquez, Inc.

UNI-FORMS built this 800 bed hospital in record time . . . formed walls, slabs, beams, columns, tunnels, retaining walls . . . and saved $36,748.60 in forming material costs alone!

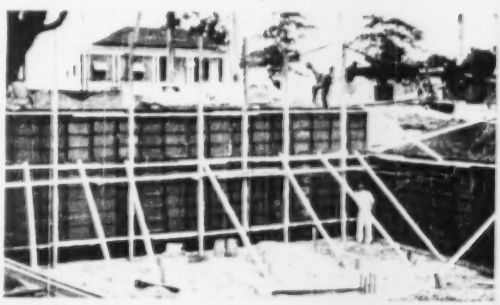
UNI-FORMS reached the job ready to use . . . provided faster, smoother forming cycles . . . labor costs were ½ the estimate . . . possible only with UNI-FORMS!

You can use UNI-FORMS . . . to form *any* type of concrete . . . to save time, labor and material . . . to assure more profit on every yard of concrete you pour.

BILL OF MATERIAL FOR FORMING CONCRETE ON TURERCULOSIS HOSPITAL, RIO PIEDRAS, PUERTO RICO

***ESTIMATED:**	
1,000,000 Bd. ft. of lumber required for forms, walers, alignment, etc., @ $ .10 per Bd. ft.	$100,000.00
LESS 20% lumber salvage	20,000.00
TOTAL ESTIMATED COST	$ 80,000.00
†UNI-FORM COSTS:	
22,500 sq. ft. of UNI-FORMS	$ 37,256.80
400,000 bd. ft. alignment and bracing lumber actually used	40,000.00
SHIPPING UNI-FORMS TO JOB	3,800.00
	$ 81,056.80
Less Contractor's valuation of UNI-FORMS at end of job, 80%	$ 29,805.40
LESS 20% LUMBER SALVAGE	8,000.00
TOTAL ACTUAL MATERIAL COST	$ 43,251.40

UNI-FORMS SAVED ½ ON LABOR, TOO!



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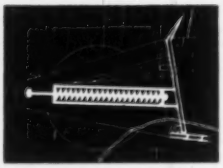
Form Clamp Company
Founded 1912
1238 N. KOSTNER • CHICAGO 51, ILL.

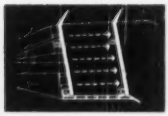
Entirely New GarWood 625

LARGE CAPACITY

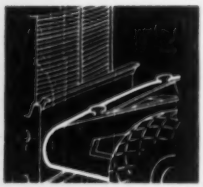
Heaped load (1:1 slope)	24.5 cu yd
Struck load (line of plate)	19.2 cu yd



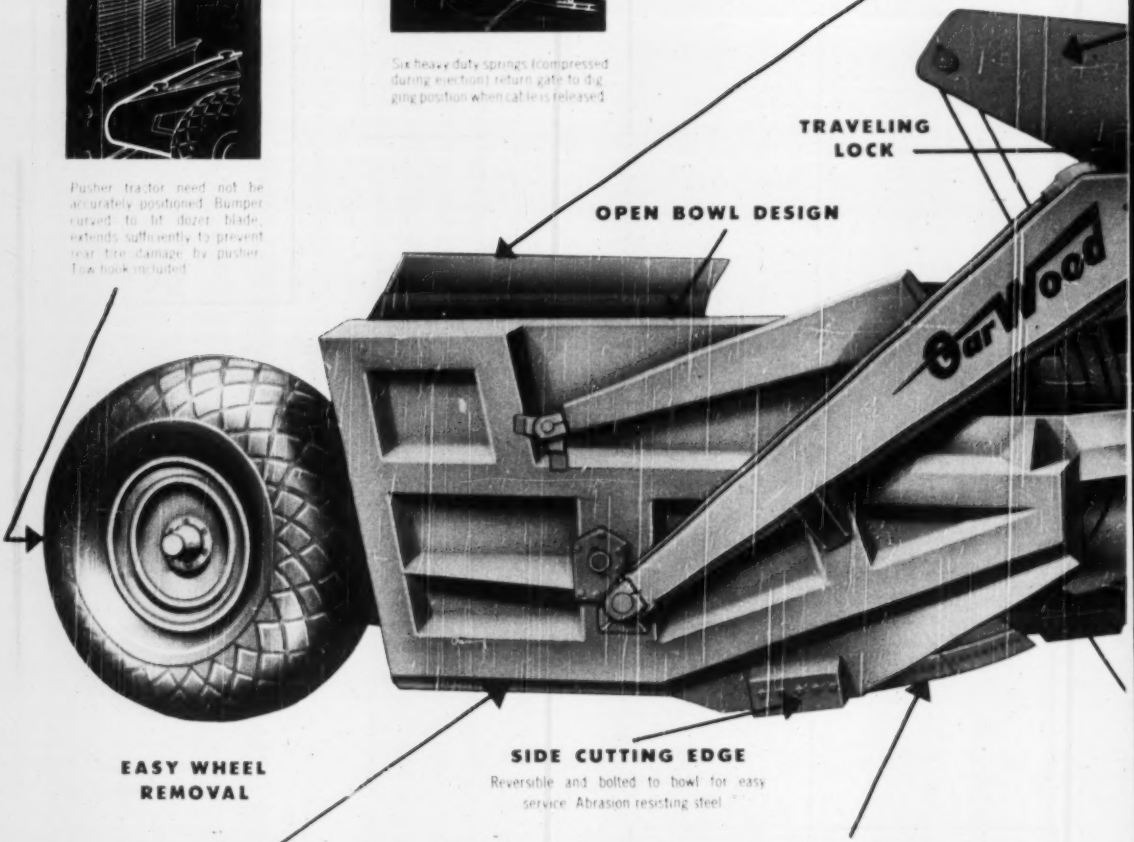
Six heavy duty springs (compressed during ejection) return gate to digging position when cable is released.



Ejector gate wipes bowl sides and bottom clean as it rolls forward to positively eject all material. Rate of ejection is controlled.



Pusher tractor need not be accurately positioned. Bumper curved to fit dozer blade, extends sufficiently to prevent rear tire damage by pusher. Tow hook included.

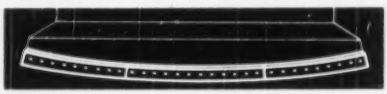


EASY WHEEL REMOVAL

SIDE CUTTING EDGE

Reversible and bolted to bowl for easy service. Abrasion resisting steel.

Maximum strength and rigidity are provided by all welded construction of the double bottom with bowl sides and back.



For easier, faster digging and maximum economy. End sections interchangeable as well as reversible. Optional center extension cutting edge for hard digging.

ASK YOUR GAR WOOD—ALLIS-CHALMERS DEALER FOR A DEMONSTRATION

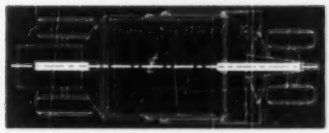
GAR WOOD GW INDUSTRIES

GAR WOOD INDUSTRIES, INC.

Findlay Division • Findlay, Ohio

AC

SCRAPER = New Low Costs Per Yard

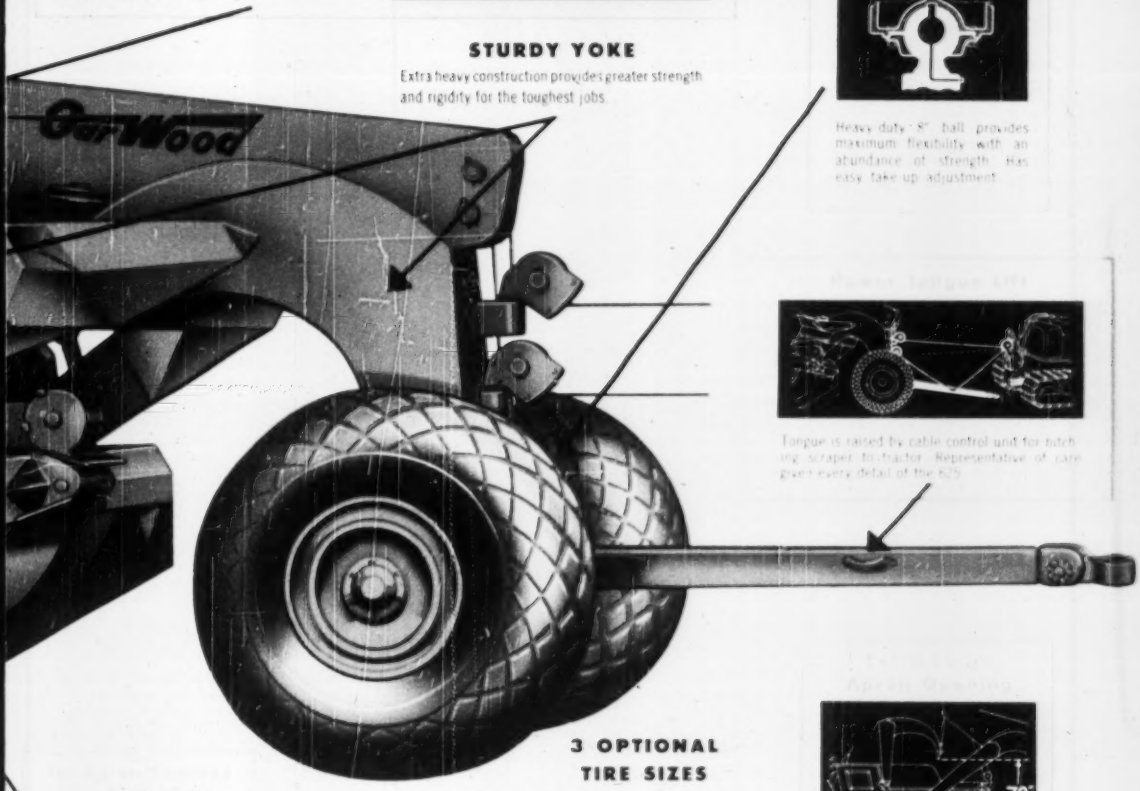


Simplified and improved reeving lengthens cable life. To keep out dirt, sheaves are completely enclosed in boxes with hinged tops for easy accessibility when servicing.

STURDY YOKE

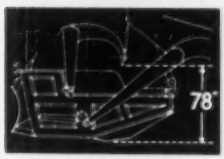
Extra heavy construction provides greater strength and rigidity for the toughest jobs.

Heavy duty 5" ball provides maximum flexibility with an abundance of strength. Has easy take-up adjustment.



3 OPTIONAL TIRE SIZES

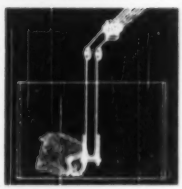
Tongue is raised by cable control unit for hitching scraper to tractor. Representative of care given every detail of the 625.



78" apron opening with scraper in carry position is ample for positive ejection of sticky materials and large rocks.

EASIER TO SERVICE

All parts requiring service are quickly and easily accessible. Need for service has been reduced to a minimum.



Twin cable lines run from traveling sheave block to the apron equalizing hook. No sheaves in dirt.

SEE YOUR GAR WOOD—ALLIS-CHALMERS DEALER OR MAIL THIS COUPON

GAR WOOD INDUSTRIES, INC.
Findlay Division, Dept. 022-3
Findlay, Ohio

Please send me bulletin describing the new Gar Wood 625 Scraper

Name _____

Company _____

Address _____

FORM P-625-3 4-50 COPYRIGHT 1950 LITHO IN USA

Digging Ditches deeper and faster

The Hyatt Roller Bearings in the transmission of Buckeye Traction Ditchers provide high-load carrying capacity, long life, quiet operation, minimum power and maintenance requirements and wide flexibility in design and assembly procedures.

Built by Garwood Industries, this ingenious machine digs ditches deeper and faster with the assurance that its Hyatt equipment will help keep it on the job continuously.

Because both machinery builders and users have come to realize that when Hyatts go in, bearing wear and care go out. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

MUNICIPAL AFFAIRS

METROPOLIS OF FLORIDA'S WEST COAST—This aerial view of Tampa shows the Hyde Park section in the foreground and across the Hillsborough River in the background is the downtown business district. At the left are the grounds of the Florida State Fair. The chief feature of the University of Tampa campus in the center is the Moorish minaretted building of the former Tampa Bay Hotel built in 1884.

Every working hour a new home is started in Tampa

The Federal Housing Administration puts Tampa, Fla., in the forefront among the leading cities of the United States in housing construction, and says that every working hour a new home is started in that city.

Located on the west coast of Florida, about midway down the peninsula, Tampa has a population of more than 200,000, and is growing fast.

To take care of expansion, Tampa is extending its municipal facilities, and right now is in the midst of a $6,000,000 sanitary sewer project, while Hillsborough County is building a $2,250,000 courthouse. The municipally owned international airport now has concrete runways 7,000 ft long.

Housing developments

Pittsburgh, Pa.—Work starts soon on a 16-story apartment building at Sixth Ave., Bigelow Blvd. and Grant St. It will house 570 families, have a 4-story garage in the rear, and will cost $7,000,000. At Webster Ave. and Fennel St. an 18-story apartment house will be built to house 465 families. A ramp-type garage will occupy the first three stories, with space for 250 cars. Total cost, $5,500,000.

Benton Harbor, Mich.—The local housing commission has received the approval of the city commission to proceed with the construction of a 75-unit low-rent housing project under grant from the Public Housing Administration. For this $800,000 project, the commission will use the services of two Detroit firms, Leinweber, Yamasaki & Hellmuth, architects, and H. E. Beyster Corp., architects and engineers. Hubert Van Dongen, of Benton Harbor, is associate architect. Construction is expected to start about Sept. 1.

Columbus, Ohio—A multiple apartment development containing 1,342 units and covering 56 acres, representing an investment of $8,800,000, will be built in Columbus, Ohio, south of E. Broad St. and west of Innes Road, announced Karl Kunkler, district FHA director, who said funds are being provided by the New York Life Insurance Co., New York. Also figuring in the development is the O'Toole Mortgage Co., Wilmington, Del. Construction will begin soon and continue for 18 months. Four corporations will build the project. They were formed by Don A. Lottus, Cleveland real estate operator; Donald E. Ryan, executive of Investors Diversified Services, Inc., Minneapolis; and Webster R. Robinson, New York, economist. The multiple-apartment development will include a total of 5,032 rooms.

Plan R.R. track relocation in Salt Lake City

The Union Pacific, Denver & Rio Grande Western and the Western Pacific railroads have announced cooperative plans for a $500,000 track relocation job that will remove rails from a mile-long stretch of streets in Salt Lake City, Utah.

Work scheduled to start soon calls for diversion of rail traffic from Sixth West Street inside a year's time, and will be featured by construction of a jointly operated traffic control and interlocking tower near South Temple and Fourth West Streets. Interchange trackage being laid will enable UP freights, Rio Grande passenger and freight trains and Western Pacific passenger and freight traffic to operate over the rails of the cooperating companies, speeding rail movements and partially cutting the traffic barrier on Salt Lake's west side.

The Union Pacific is to bear 47% of the project cost, with the WP and Rio Grande splitting the remainder of the costs for the track relocation project.

Traffic engineering awards

Nation-wide traffic engineering awards for the year 1949 were announced recently by the Institute of Traffic Engineers. All 48 states and 544 cities participated in the contest for outstanding traffic engineering achievements. Factors considered were control devices, surveys and studies, lighting, intersection design, administration, and planning.

The awards were as follows: States: Eastern region, duplicate first place award, Connecticut and Massachusetts; Southern region, 1st, Virginia; 2d, Tennessee; Midwest region, 1st, Minnesota; 2d, Wisconsin; Western region, 1st, Utah; 2d, Washington; heavy population, 1st, Michigan; 2d, California.

Cities: 1,000,000 pop. and over, 1st, Detroit, Mich.; 2d, Los Angeles, Calif.; 750,000 to 1,000,000, duplicate 1st, Washington, D. C.; and Cleveland, Ohio; 500,000 to 750,000, 1st, Pittsburgh, Pa.; 2d, Buffalo, N. Y.; 200,000 to 500,000, 1st, Syracuse, N. Y.; 2d, Cincinnati, Ohio; 100,000 to 200,000, Arlington, Va.; 2d, South Bend, Ind.; 50,000 to 100,000, duplicate 1st, Fresno, Calif. and Evanston, Ill.; 25,000 to 50,000, 1st, Burlington, Iowa; 2d, Belmont, Mass.; 10,000 to 25,000, 1st, Wilmette, Ill.; Stillwater, Okla.

MEN AND JOBS

Neil M. McCallum has been named chief engineer of the British Columbia Public Works Department and chairman of the B. C. Highway Board, succeeding **Harry C. Anderson,** who resigned recently to become vice president and general manager of General Construction Co. at Vancouver. Mr. McCallum was formerly assistant chief engineer. **Alfred J. Bowering** becomes assistant chief engineer and a member of the highway board, succeeding him. **O. J. Wilkie,** divisional engineer at Williams Lake, becomes construction engineer at Victoria. **S. A. Cunliffe** moves from Prince George to New Westminster as divisional engineer; **D. D. Godfrey** moves from Revelstoke to Prince George as divisional engineer; **M. Struve,** resident engineer on the Hope-Princeton Highway, becomes district engineer at New Denver; **J. A. Dennison,** district engineer at New Denver, moves to Cranbrook in a similar position; **J. Hague,** district engineer at Cranbrook, is promoted to divisional engineer at Williams Lake; and **W. H. Cotton** moves from district engineer at Fernie to the same job in Vancouver Point Grey.

L. J. Peck, left, Peck Pump and Equipment Co., Albany, N. Y., and Clyde Van Deusen, right, water superintendent, pause for a moment while checking up on the chlorinating and recirculating system for the Chatham, N. Y. open reservoir.

Federal government dredging of East Basin, Wilmington district, Los Angeles Harbor, costing $600,000 has been proposed. Millions of dollars in new construction is proposed by Board of Harbor Commissioners. Inspecting map of site, left to right: F. C. Earle, chief engineer, Los Angeles Harbor Department; Col. W. D. Luplow, L. A. district engineer; Corps of Engineers, Kenneth Peal, chief of Rivers and Harbors Section; and James Jobes, chief of Civil Works Branch, Los Angeles district engineers.

Edgar W. Earle, senior civil engineer of the Erie County, N. Y., highway department, who designed and supervised the construction of county roads costing more than $25,000,000 in the last 25 years, is retiring. He joined the department in 1925 when the county's motorways system was being blueprinted. He received his degree in engineering from Union College. His first job was as a surveyor for the New York Central Railroad. Later he was an assistant engineer for the New York City Board of Water Supply. He became an assistant engineer for the New York State Highway Department, and later supervised the construction of roads in Arkansas and North Carolina.

Ralph Granger has been appointed Medina County, Ohio, engineer at Medina, to succeed the late Ralph Widdifield. Wayne Anderson, a former county engineer and a state highway division engineer, succeeds Granger as chief deputy county engineer.

Jesse L. Tygart, former construction engineer with the Plaskon division of Libbey Owens-Ford Glass Co., Toledo, Ohio, has joined Paul R. Jeffers, Inc., Toledo, heavy construction and earthworking contractors, as chief engineer.

M. Erkkila, who has been with the Minnesota highway department for 15 years, has been named city engineer of Chisholm, Minn., succeeding Geo. T. Anderson.

Henry Shaw, resident engineer at Weldon, N. C., for the North Carolina Highway Department, has been transferred to Warrenton where he will supervise road construction in Warren County.

A. J. Rhodes is the new city engineer of Parsons, Kan. He is a graduate of Kansas State College and for the last four years has been a consulting engineer in Wichita.

S. A. Cunliffe, recently named provincial engineer at Prince George, B. C., has returned to New Westminster, to be divisional engineer for the lower mainland and coastal area, from Silver Creek to Ocean Falls. He succeeds the late O. P. Roberts.

Olney E. Hawkins of the Portland, Ore., district Corps of Engineers, has retired to become port engineer for the Koppers Co., Inc., at Zonguldak, Turkey, on the south shore of the Black Sea. He will be engaged in harbor development and jetty construction.

Prof. Bruce G. Johnston

New professor of structural engineering in the department of civil engineering, college of engineering, University of Michigan, is Bruce G. Johnston, who has been a member of the civil engineering staff of Lehigh University for the last 12 years. He has been director of the Fritz Engineering Laboratory for three years.

Professor Johnston obtained his B.S. in civil engineering at the University of Illinois in 1930, his M.S. at Lehigh in 1934, and his Ph.D. at Columbia in 1938.

On leave of absence from Lehigh 1942-45, he was a structural engineer, Bureau of Yards and Docks, U.S. Navy, 1942-45, and was senior engineer and project supervisor, applied physics laboratory, Johns Hopkins University, 1944-45. In 1937 he was awarded the James R. Croes medal by the ASCE.

AIA will promote modular coordination

The American Institute of Architects, Washington, D.C., has appointed William Demarest, Jr., of New York, as secretary for modular coordination in its Department of Education and Research.

Through contacts with architects, schools of architecture, builders, manufacturers of building materials, and the Housing and Home Finance Agency, Mr. Demarest will provide a

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For all basic pumping functions in a building there are Yeomans Pumps that will give long years of quiet dependable performance.

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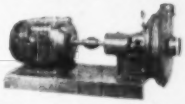

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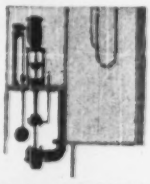
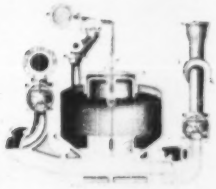


SEWAGE EJECTION — Acknowledged throughout the world as approaching perfection, the trusty Shone* Pneumatic Sewage Ejector is ideal — wherever gallonage is limited and solids are not. Yeomans also builds centrifugal sewage pumps for both wet pit and dry pit installations — in sizes up to 14 inches and capacities up to 24,000 gpm.



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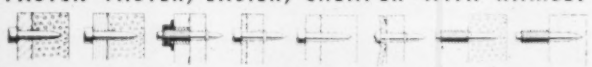


unifying factor for the further development of modular standards (the use of materials based on a 4-inch unit), and a more general acceptance and adoption of the principles of modular coordination.

Creation of this new position is a main feature of a plan to promote such coordination drawn up by a joint committee of the AIA and The Producers' Council.

Mr. Demarest is an architectural graduate of Princeton and Columbia and has been employed by Harrison & Abramovitz and Ronald Allwork, of New York, and by Naramore, Bain, Brady, and Johanson, of Seattle.

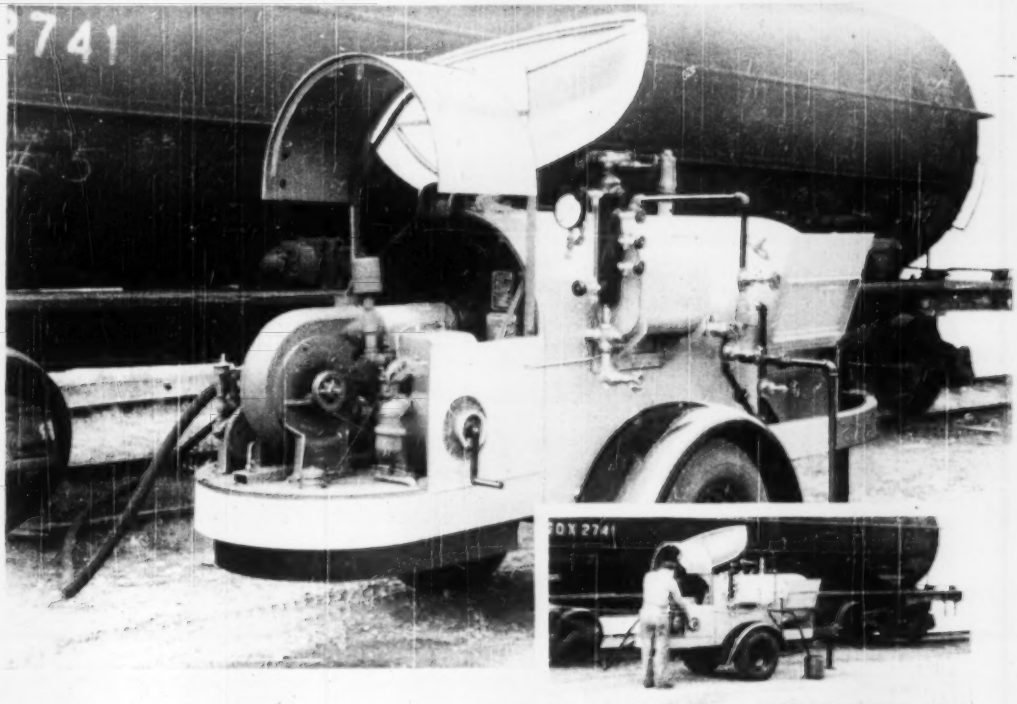
Educational Notes

New Engineering building — At the University of Illinois recently, a new mechanical engineering building costing about $1,800,000 was dedicated in the presence of 300 engineers and educators representing all phases of engineering activity throughout the country. Guest speaker was Prof. W. C. Huntington, head of the department of civil engineering and chairman of the university's building program committee.

Laboratory manual — Unification of many instruction books for engineering laboratory equipment has been accomplished at the University of Detroit, where Prof. Herman E. Mayrose, director of the department of engineering mechanics, has published a special "Engineering Mechanics Laboratories" manual. Explaining the need for unification, the author says: "College engineering laboratories contain many complicated machines and instruments. As each of these is purchased, instructions for its use come from the builder or are written by some member of the faculty. These books come in all sizes and shapes, and as they are in constant use they are rapidly worn out and must be replaced frequently."

Research foundation — The Wisconsin Alumni Research Foundation is a non-profit corporation which obtains its funds from royalties on patents assigned to it by University of Wisconsin professors. Since its organization in 1925, the foundation has provided more than $4,500,000 in research grants-in-aid to the university.

President Harvey Nathaniel Davis, of Stevens Institute of Technology, Hoboken, N. J., has notified the board of trustees of his desire to retire as of Sept. 1, 1951, when he will have served as president for 25 years.



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On the Concourse

Located at 930 Grand Concourse, in upper New York City, this recently erected structure is known as the Ashley Apartments. Its three 11-story buildings contain 111 apartment units, varying in size from 2 to 5½ rooms. The structure includes spacious roof gardens and terraces, and dropped living rooms, and has steel framed windows throughout. Its lower floors are devoted almost wholly to doctors' apartments.

Beneath the cream-color exterior of the Ashley Apartments stands an 800-ton steel framework of Bethlehem Structural Shapes.

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OBITUARY

Henry H. Kranz, 63, city engineer of Cincinnati, Ohio, for 12 years, died June 10, shortly after speaking at a dinner meeting in the Hotel Sinton. He was a graduate of the college of engineering of the University of Cincinnati. From 1917 to 1919, he served as a captain in the U. S. Army Corps of Engineers. In the last few years he had supervised the planning of many important city improvements.

Edward M. Lowe, 59, of Horsham, Pa., died June 8 in Chicago. He was associated with the engineering firm of W. J. Harbers and Co. of Telford, Pa. for a short period before his death. Prior to that he had been a construction engineer with Swift and Co.

Baxter Hunter Bruce, 62, smoke regulation engineer of Akron, Ohio, died June 8. Captain Bruce was retired in 1944 after 41 years in the U. S. Navy. He was a graduate of the Naval Academy in 1917.

Elmer Bisbee, 67, former construction engineer with Consolidated Western Steel and noted for his work in engineering mile-long assembly systems for heavy bomber production during World War II, died June 7 in Los Angeles. Bisbee was also co-owner of the Industrial Construction Co., Los Angeles. He retired from active service with Consolidated five years before his death. He was graduated in structural engineering from the University of Minnesota.

Taggart, Aston, 76, civil engineer and former president of the Engineers and Architects Institute, died at Los Angeles, Calif., June 5. After engineering experience in South Africa, he went to California many years ago. His work has included surveys and reconnaissances for railroads in California and Oregon; city planning and sub-division in California; surveys and plans for port terminals. Much of his later life was devoted to harbor improvements, having been called upon in a consulting capacity for study of harbors at Los Angeles, Grays Harbor, Seattle, Everett, Wash., Bellingham and Blaine, Wash., and other ports along the Pacific Coast and in Central America. In competition with eight other American engineers, he won an international harbor planning contest in 1928-29 for the design of the new Free Port for Barcelona, Spain, which included breakwaters, drydocks, extensive wharfage, warehouses, factories, and port terminals.

Century

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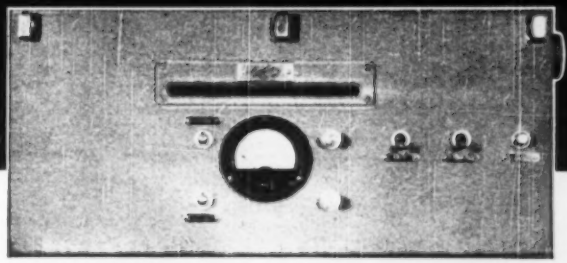
A low cost, portable refraction seismograph for civil engineering and allied industries.



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ELECTIONS AND ACTIVITIES

Clarence Buell has been elected president of the Oneida-Mohawk Valley Chapter, New York State Society of Professional Engineers. Others elected were: First vice-president, Leo LaRow; second vice-president, Earl Swain; treasurer and financial secretary, Foster Ringrose; secretary, Carl A. Zimjohn; directors for three years, Lawrence Griswold and Theodore Murnane.

Kenneth G. Larson was elected president of the Central New York Chapter of the New York Society of Professional Engineers at the annual chapter meeting in Syracuse, N. Y. Others elected were Victor E. Hall, vice-president; Paul F. O'Neill, secretary-treasurer, and Wilfred H. Sharrer, Robert W. Oertel and Richard M. Cormick, directors.

William J. Hedley, assistant chief engineer, Wabash Railroad Co., is the new president of the Engineers' Club of St. Louis, Mo. A past president of the St. Louis Section of the American Society of Civil Engineers, Mr. Hadley succeeds R. Earl Salveter, executive vice-president, Woermann Construction Co., as president. Other officers: First vice-president, M. D. Dawson; second vice-president, N. J. Campbell; third vice-president, E. E. Bliss; treasurer, H. S. Miller; and W. E. Bryan, secretary.

Ray Soule, Burlington, Vt., has been elected president of the New England Building Officials. Others: first vice-president, Fred Ripley, New Bedford; second vice-president, Warren McDonald, Portland, Me.; third vice-president, Paul Caros, Dover, N. H.; fourth vice-president, Arthur Rutherford, Hartford, Conn.; secretary, John T. Riley, superintendent of construction, Boston, and treasurer, Lawrence M. Hubbard, Wethersfield, Conn. The group voted to create a legislative committee to collaborate with state legislatures in screening all legislation that has to do with building laws and to prevent enactment of impractical construction legislation. This committee will be headed by Chairman Gordon Robinson, Springfield, Mass. Eugene Quindlan and Murray Phanlski, Boston, have been named legislative agents.

Topics discussed at the recent fourth annual *Florida Highway Conference* at Gainesville under the sponsorship of the department of civil engineering of the University of Florida included: Parking; soil stabilization and compaction; surfaces for low-cost roads; air entrained concrete and highway soil engineering. Groups represented at the conference included the State Road Department, Bureau of Public Roads, County and City officials and engineers, contractors, materials and equipment people and many others.

Wayne E. Edwards of Endwell, N. Y., has been elected president of the newly organized Southern Tier Chapter of the National Association of Home Builders. Other officers elected were: vice-president, Frank J. Placek, Johnson City; secretary, Fred Kurs, Vestal; and treasurer, Franklin B. Borden, Binghamton.

John H. Pattison, Kitsap County Engineer at Port Orchard, Wash., has been elected president of the Washington State Association of County Engineers. Donald B. West of Chelan County will serve as vice-president and L. W. Poutto of Pacific County, as secretary-treasurer.

MAJOR MEETINGS

Annual Conference on the Small Community, Yellow Springs, Ohio, June 30-July 2.

American Society of Civil Engineers, annual convention, Royal York Hotel, Toronto, Ont., July 12-14.

Maine Water Utilities Association, summer meeting, Mt. Desert Island, Me., Aug. 9.

ASCE, North Carolina section, joint meeting with N. C. Society of Engineers, Wrightsville Beach, N. C., Aug. 18-19.

Pennsylvania Water Works Operators' Association, annual conference, Nittany Lion Inn, State College, Pa., Aug. 21-22.

Pennsylvania Sewage & Industrial Wastes Association, Nittany Lion Inn, State College, Pa., Aug. 23-24.

N. Y. section AWWA, fall meeting, Saratoga Spa, Saratoga Lake, N. Y., Sept. 5.

W. Va. section AWWA, annual meeting, Prichard Hotel, Huntington, W. Va., Sept. 14-15.

American Railway Bridge and Building Association, annual meeting, Hotel Sherman, Chicago, Ill., Sept. 18-20.

N. Y. Metropolitan section Institute of Traffic Engineers, [illegible], Sept. 21-23.

American Institute of Park Executives, annual convention, Baker Hotel, Dallas, Tex., Sept. 25-28.

Stud Welding gets it On!

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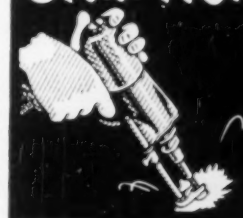

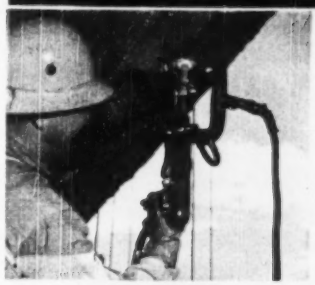

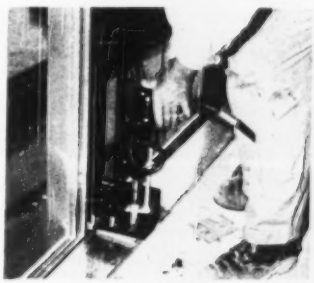

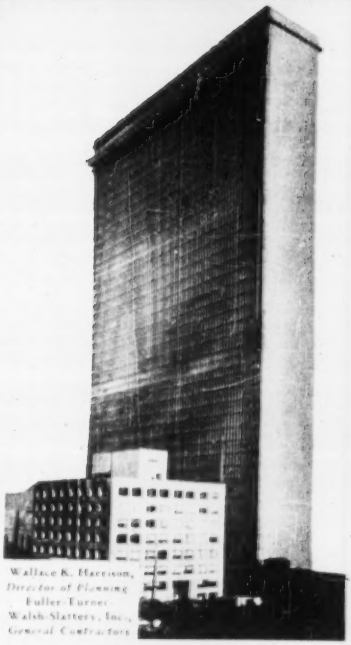

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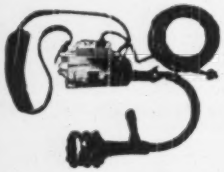

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UNIT PRICES BID BY CONTRACTORS

Elevated water tank, Davis Dam, Ariz.-Nev.

Four bids, April 6, 1950, on the 75,000-gal elevated water storage tank ranged from $24,976 to $31,200, erection time 180 calendar days. This is a range of 33.3 to 37.2 cents per gal of capacity. This is for furnishing, erecting, testing, obstruction lighting and painting water tank for fire protection and domestic water system, Colllidge substation, Davis Dam project, Arizona-Nevada.

The tank shell, bottom and roof are welded, the tower and balcony may be welded or riveted at option of contractor. The tank bottom is elliptical, or similar but not hemispherical, capacity 75,000 gal between high and low water lines. The tank must be designed for earthquake resistance. Height is 110 ft to bottom of tank capacity.

Minimum wage rates are: structural iron workers $2.225, welders same; carpenters, $2.10; electricians, $2.25; laborers, $1.45; painters, brush, $2.00, spray, $2.175, steel and bridge, $2.25; plumbers, $2.25, equipment operators, shovels, cranes and derricks, $2.225, air compressors $1.775.

Bidders were:

1 W. E. Caldwell Co., Inc., Louisville, Ky.	$24,976
2 Pittsburgh Des Moines Steel Co., Santa Clara, Calif.	27,300
3 Allison Steel Mfg. Co., Phoenix, Ariz.	29,995*
4 Chicago Bridge & Iron Co., Los Angeles, Calif.	31,200

Concrete highway relocation for Wolf Creek Dam, Ky.

A new U. S. 27 route through Pulaski County, Kentucky will cost $394,213. It will replace the highway that will be inundated by the Wolf Creek Dam reservoir. H. H. Sandusky is district engineer at Somerset, Ky., for the State Highway Department.

Bids were taken March 31, 1950 on 3.675 mi of portland cement concrete pavement. They brought in unit prices below the average low bids of the past 2 years on 9 items and above the average low bids for the past 5 years on 10 items. The lower prices were on clearing and grubbing, concrete, integral curb, borrow, structural excavation, unclassified and common, man holes, 12" CM pipe, 18" and 24" SRC pipe, concrete sidewalk and water supply. The higher unit prices are for removing sidewalk, roadway and shoulder, trench excavation, 18" and 24" CM pipe, 15" & 30" RC pipe, scarifying and reshaping and steel reinforcing. Low bid unit prices for this job are shown here two ways: 1, compared with average low bids for 1947, '48, and '49, and 2, compared with the second low on this job.

Work must be completed in 200 calendar days. The Southern Railway is adjacent to the job. Wage rates are: for skilled labor $2.00 to $2.20, semi-skilled $1.75 to $2.00, common $1.00 an hour. The low bid was 2.5% below the second low and 16% below the high bid.

Unit price trends—Kentucky

Item	Dec. 1947	Dec. 1948	Dec. 1949	US 27 5/'50
Clear & grub.....ac	$82 58	$67 79	$81 76	$60 00
Concr, CI A.....cy	42 19	45 58	46 84	45 00
Conc steps, rem.....cy			8 13	5 00
Curb integral.....lf	68	.77	1 18	.50
Excavation				
Roadway.....cy	60	.57	.56	1 03
Borrow.....cy	43	.32	.31	.22
Trench, shldr.....cy	73	.50	.71	.75
Struct, uncl.....cy	3 51	3 89	6 93	5 00
Struct, com.....cy	5 07	8 83	5 25	4 00
Struct, rock.....cy	10 12	10 65	9 33	10 00
Final dressing.....sta	20 42	20 48	20 02	20 00
Limestone, insul cr #6, #610.....ton			2 62	2 25
Manholes.....ea	190 36	221 48	325 00	220 00
Pav, cmt concr.....sy	3 05	4 23	3 09	3 74
Remove.....sy	1 20	.85		.50
Pipe entr				
CM-15".....lf	2 33	2 36	2 44	2 30
CM-18".....lf	3 17	3 08	3 05	3 25
CM-24".....lf	3 92	4 13	4 15	4 50
Pipe culv				
RC 15".....lf	2 70	2 99	2 55	3 20
RC 18".....lf	3 23	3 42	3 55	3 00
RC 24".....lf	4 32	4 64	4 88	4 50
RC 30".....lf	6 54	6 47	6 90	9 00
Proj monuments.....ea	25 32	26 20	30 81	35 00
Scarif & reshap.....sy	.08	.08	.06	.15
Sdwk, concr 4".....sy	2 97	3 17	3 35	3 20
Remove.....sy	33	.45	.43	.70
Steel reinf.....lb	093	.106	.06	.11
Water.....100 gal	.09	.07	.10	.05

Bidders on relocation of U. S. 27 were:

1 Fuller-Davies Co., Covington, Ky. (contract)	$394,213.01
2 Codell Constr. Co., Inc. Winchester, Ky.	404,453.08
3 Foster & Creighton Co. Nashville, Tenn.	407,389.47
4 Kelly Constr. Co. Louisville	468,100.19

Items, US 27, May, 1950	Quantity	Unit Prices 1/C	2
Clear & grub.....ac	22.59	$60 00	$45 00
Rdway excav.....cy	91,425	1 03	0 84
Borrow excav.....cy	12,721	.25	.35
Struct excav, com.....cy	80	4 00	4 00
Unclass.....cy	615	5 00	4 50
Solid rock.....cy	40	10 00	10 00
Rem concr pave.....sy	1,900	.50	.50
Adj curb & gutr box inlet			
18" type 2.....ea	4	40 00	50 00
24" type 2.....ea	2	50 00	50 00
Curb & gutr box inlet			
15" type 2.....ea	5	280 00	275 00
18" type 2.....ea	1	275 00	275 00
4" concr sdwk.....sy	1,750	3 20	4 00
Scar & reshap.....sy	200	.15	.10
Manhole.....ea	1	220 00	450 00
Adj mh to grade.....ea	2	75 00	40 00
Water.....100 gal	2,420	.05	.10
Proj monuments.....ea	2	35 00	30 00
Final dressing.....sta	194	20 00	20 00
Rem concr sdwk.....sy	10	.70	.25
Rem concr steps.....cy	1	5 00	25 00
CI "A" concr.....cy	131.81	45 00	48 00
Steel reinf.....lb	8,470	.11	.12
Pipe 15" entr, CM.....lf	144	2 30	2 25
18" entr, CM.....lf	24	3 25	3 00
24" entr, CM.....lf	24	4 50	4 25
18" culv CM.....lf	100	3 25	3 00
24" culv CM.....lf	39	4 50	4 25
18" spec. culv.....lf	225	4 00	3 75
24" spec. culv.....lf	52	5 50	5 35
15" culv, RC.....lf	579	3 20	2 50
18" culv, RC.....lf	747	3 00	3 60
24" culv, RC.....lf	96	4 50	4 15
30" culv, RC.....lf	18	9 00	7 50
Cr limest insul.....ton	6,890	2 25	2 15
Cr limest entr.....ton	320	2 25	2 15
Cmt concr pave.....sy	63,154	3 74	4 15
Integral curb.....lf	10,762	.50	.25
Rdway excav for shoulder matr.....cy	10,000	.75	.50

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Ont. New Hamburg—(B. A. 7/13) (L) Dundas Twin Hollow Water Co., Ltd., will receive bids until 8 p.m. (EST) July 10 for 2,000,000-gal water tank and tower, 100 ft high, and 12-in water mains. Plans on deposit in office of Township Clerk, New Hamburg, Ont. Engr: Proctor & Redfern Ltd., 347 Bay St., Toronto, engr.

Ark. Magnolia—(B. A. 7/27) (L) City Water Comm., Magnolia, is receiving bids until 2 p.m. July 31 for 500,000-gal water tank, water system improvements, $150,000. Plans deposit $35. Marion S. Hurst & Associates, Little Rock, Ark., engrs. (CD 5/25)

La., Iota—(B. A. 7/17) Town, $150,000 water system improvements additions. Bonds issued. Plans on file at Town Hall. Engr: Bridges, Baton Rouge, engrs.

Tex., Childress—(B. A. 7/10) City, 6 miles reinforced concrete pipeline, pumping station, 1,000,000-gal ground storage reservoir, $450,000. Plans deposit $100, refundable. Address Mayor. Water Supply engr: Cox & Co., Inc., Fort Worth, engr. (CD 2/9)

Fla., Fort Lauderdale—(B. A. 7/...) At office City Auditor, receives bids for furnishing and erecting one 500,000-gal elevated steel water tank on tubular tower, constructed to 110 ft, $125,000. Plans deposit $25. Engr: Parkins, City Engr's Asst. ENR 6/22.

▲† Tenn., Tullahoma—(B.A. 6/29) (L) Tullahoma Utilities Board, Tullahoma, Tenn., will receive bids until 2 p.m. (CST) July 12 for 400-ft pumping station with mixed-flow type pumps, motors, etc., to be constructed to pump cooling water for Tennessee Valley Authority Development Center near mouth of Hurricane Creek, approx. 2 mi. from dam near Tullahoma on Elk River. Approx. $3,000,000. CD 12/14.

Tex., Galena Park—Bids Asked. Frank Teague, Paul E. Wolf & R. A. Mills, Associated Engrs., Bank Bldg., Houston, water treatment plant, $40,000; standpipe & mains, Milam Bldg., Houston, engrs.

LOW BIDDERS

Ga., Atlanta—(B. A. 6/22) Elevated steel water tank, 1,000,000-gal capacity, 200 ft high, and 8-in mains, bids received, $295,875. CD 6/14.

Mass., West Boylston—Town Water Comm., West Boylston, awards 4 mi pipe laying, etc., from Contractors & Sheet Inc., 24 Leland Ave., Leominster, $35,540.

CONTRACTS AWARDED

Pa., Bristol—(Bridge) (corr. 6/15) (L) Concrete water tanks, to Tri-County Construction Exterior Work, $32,302. William H. Eastwood, 126 Walnut St., Phila., engr.

R. I., Warwick—City Bd. Water Comrs., Warwick, awards 1,000 ft, 6- to 20-in C.I. water mains, Pawtucket Neck to Tarr & Jordan Streets, to Atlantic Contracting Co., Providence, $122,235. Est. $130,000. Bids 6/15. CD 5/29.

Tex., Woodville—City, water lines, mains, Purchase and Fire. Approx. $30,000.

Va., Exmore—Town, elevated steel water tank, to Chicago Bridge & Iron Co., Inc., 1700 Walnut St., Phila., Pa., $50,400. Bids 4/25. CD 4/12.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Minn., St. Louis Park—(E.A. 7/...) (L) Village, Utah Ave. S. and Minnetonka Blvd., 14,000 lin ft 8-in sewer, 62 manholes, 2 drop manholes, 2 flushing manholes, 30 lin ft concrete pipe under pavement for sanitary sewer. Dist. 2, $150,000. R. W. Jones, Village of St. Louis Park, village engr. CD 1/26/50.

Ont., Port Credit—(B.A. 7/...) (L) Sewage disposal plant, sewage treatment plant. Approx. $2,000,000. Plans deposit $200. W. J. Anderson, 670 Lakeview Ave., C.E.

Kan., Beloit—(B. A. 7/5) City office City Clerk, Beloit, receives sewer extension, 700 lin ft, 15-in and 8-in C.I. sewer, 1,000 lin ft 8-in C.I. sewer, 26 manholes with type work, 6 lin ft R. C. pipe, 1 standard manhole, 2 shallow manholes, 2 lin ft extra manhole depth, 14 sq yd replacement of brick surface. Plans deposit $5, refundable $2.50. Wilson & Co., 223 N. Santa Fe St., Salina, engrs.

Tex., Houston—(B.A. 7/5) City, City Hall, 900 Bissonnet, receives 1 mi sewer in Brays Oaks Addition, sewer line to be laid in Brays Bayou. Plans deposit $25. Engr: Lockwood, Andrews & Newnam, Houston, engrs. (CD 6/15)

Tex., Petersburg—(B.A. 7/...) City, treatment plant, sewers, $150,000. Plans deposit $25. Green & Green, Wilson Bldg., Lubbock, engrs. CD 12/6/49.

Fla., Jacksonville—(B.A. 7/...) City, 10 separate sewage treatment plants, sewers, pumping stations, force mains, Park St., Zone 11, engrs. CD 5/2.

Fla., Tampa—(B. A. 7/...) City, City Hall, intercepting sewers and force mains. Plans deposit $25. Greeley & Hansen, 220 S. State St., Chicago, Ill., engrs. Extension date. CD 5/2.

Mo., Farmington—(B.A. 7/...) City, (L) Maple, major sewage treatment plant, incl. auxiliaries, appurtenances, etc. Extension date. Harley A. Haskell, Finance Director, Arnold City Hall, engr. CD 4/26.

Pa., Ellwood City—(B.A. 7/...) (L) Bids Bids will be received by Boro. Boro Municipal Sewage Authority, Ellwood City, Pa., for sewage treatment plant, sewers, pumping stations, force mains. Plans deposit $..., refundable. Approx. 2mgpd, 2 c.f.s., 10.46.

Tex., Baytown—(B.A. 7/...) City, Eldon Cutter Blvd. & Texas Ave., receives bids for sewage treatment plant, brick, concrete pump station, Approx. $600,000. Plans deposit $100, refundable. Address Purchasing Agent. Engr: Fort Worth, engrs. CD 12/19, underground.

Tex., Stephenville—(B. A. 7/...) (L) C. F. Williams, Mayor, receives bids for sewage treatment plant, $350,000. Plans deposit $100, refundable. A. S. Veatch, Jr., Petroleum Bldg., Fort Worth, engrs. CD 12/3/49.

Fla., Tampa—(B. A. 7/...) City, City Hall, receives bids for sewer and water stations, sewer mains. Plans deposit $25. Greeley & Hansen, 220 S. State St., Chicago, Ill., engrs. CD 5/2.

N. Y., New Rochelle—(B. A. 7/...) At office E. H. Tarbox, Jr., Pres., Bd. of Water Commrs., receives bids for sewage treatment plant for burning sludge and sewage screenings at the Municipal Incinerating Plant. Plans deposit $10. Havens & Emerson, 1414 Avenue of the Americas, New York, N. Y., engrs. CD 11/3/49.

Ont., Tillsonburg—(B.A. 7/...) (L) Mayor and Council, Town, receive bids for sewage treatment plant, sewers, pumping stations, force mains, etc. Plans deposit $100, refundable. Approx. $1,000,000. Engr: Proctor & Redfern, Ltd., 347 Bay St., Toronto, engrs. CD 4/14.

Calif., Lodi—(B.A. 7/...) (L) Sewage treatment plant, sewers, pumping stations, force mains, etc. Plans deposit $100, refundable. Approx. $1,200,000. Engr: Harold A. Konwinski, 1120 Pine St., Stockton, engr. CD 5/25.

Tennessee and Virginia—(B.A. 7/...) (L) Bristol Utilities Board, Bristol, Tenn., receives bids for sewage treatment plant, sewers, pumping stations, force mains, etc. Plans deposit $..., refundable. Approx. $..... Engr: Wilbur Smith & Associates, Columbia, S. C., engrs. CD 5/25.

Calif., Los Angeles—(B.A. 7/17) (L) Bd. of Public Works, receives bids for sewers in Sunland-Tujunga Area, Contract No. 1, Sewer Dist. No. 1, Sewer Dist. No. 2, Sewer Dist. No. 3, Sewer Dist. No. 4, Sewer Dist. No. 5, Sewer Dist. No. 6, Sewer Dist. No. 7, Sewer Dist. No. 8, Sewer Dist. No. 9, Sewer Dist. No. 10, Sewer Dist. No.

LOW BIDDERS

California—State Div. Hgys., Sacramento, June 14. ... grade & an untreated rock surf. treatment ... Cow Rd. between State Rt. No. 4 northwest to Tracy and Rt. 7 State Dam between ... Stanislaus ... Monroe & Burr-Dee ... $103,255.

... Indiana—State Hy. Comm., Indianapolis, June 15. ... 0.414 mi. Rt. 62 ... Rt. 62 ... Evansville Rd. and W. 1st St. and White River Bridge approaches, Town Wm. Bridge ... Indianapolis ... $230,093. ... $121,696.

... Indiana—State Hy. Comm., Indianapolis, June 15. ... 0.414 mi. Rt. 62 ... Rt. 62 ... Evansville Rd. and W. 1st St. and White River Bridge approaches, Town Wm. Bridge ... Indianapolis ... $230,093. ... $77,437.

Massachusetts—Commonwealth ... Mass. Dept. of Pub. Works, Bldg. Insps. Bldg. A ... Ave., Westford, $171,158. ... more to Rte. 3 ... Boston ... $162,313.

Mo.—St. Louis—City ... Frank McDonald ... Zone 1, Lts. Hall ... Ave. ... paving, parking strip ... Lindell Blvd. to Lindell Ave. from Kingshighway ... Lindell Ave. from Bancroft to Delmar Blvd. ... Zone 22 ... $60,199.

O.—Toledo—City Architect & Engr., Municipal Bldg., June 13. ... asphalt streets ... Ave. & Park ... and bridge to ... Langendorfer & ... Rte. 4 ... $50,533.

Pennsylvania—State Hy. ... Co. N. ... Asph. ... Rte. 22 ... Lancaster ... 75 ... Rte. 22 ... between ... Bridge, Fairfax Bridge and ... Bridge, Allegheny ... Rte. 22 ... Monroeville ... $840,470.

CONTRACTS AWARDED

California—State Div. Hy. ... Sacramento ... Asphalt ... Rte. 4 ... Rte. 4 ... Rte. 4 ... $758,513.

▲ California—State Div. Hgys., Sacramento, ... Rte. 4 ... Rte. 4 ... Rte. 4 ... $1,019,424.

Calif.—Los Angeles—County ... Rte. 4 ... Rte. 4 ... Rte. 4 ... RT 000 ... Asphalt and ... Rte. 4 ... Rte. 4 ... Rte. 4 ...

Ga.—Griffin—City ... Street ... N.E. ... Rte. 4 ... Rte. 4 ... Rte. 4 ... $14,357.

Michigan—State Hy. Dept., ... Rte. 4 ... Rte. 4 ... Rte. 4 ... Ave. Arbor ... $175,949. Asphalt ...

Minn.—Fairmont—Mun. ... Rte. 4 ... Rte. 4 ... Rte. 4 ... $56,439.

Mo.—Northwoods (St. Louis P.O.)—City ... Rte. 4 ... Rte. 4 ... Rte. 4 ... $102,940.

New York—State Dept. of ... Rte. 4 ... Rte. 4 ... Rte. 4 ... $749,774.

Pa.—Phila. ... Rte. 4 ... Rte. 4 ... Rte. 4 ... Ave. ... $301,568.

EARTHWORK, WATERWAYS

BIDS ASKED

+ California—U.S. Bureau Reclamation, Dist. ... Interior, Regional ... Sacramento, Calif. ... Shasta Dam ... Rte. 4 ... Rte. 4 ... Rte. 4

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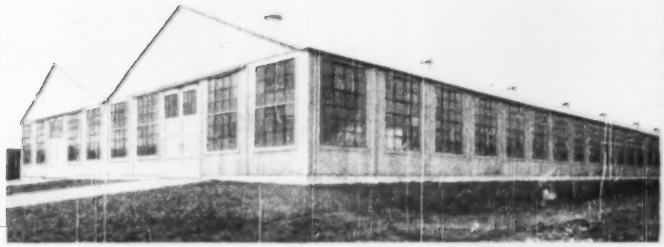

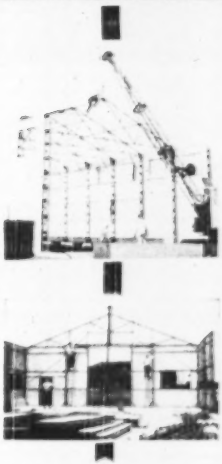

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COMMERCIAL BUILDINGS

BIDS ASKED

Ind. Anderson ... $300,000

N. C. Durham ...

SOON LETS CONTRACT

Mass. Boston ...

N. J. Lawrenceville ...

Pa. Phila. ...

Tex. Austin ...

LOW BIDDERS

N. H. Newport ...

N. J. Hasbrouck Heights ...

CONTRACTS AWARDED

Ga. Augusta ... $74,549

Ia. Ogden ... $75,591

La. Lafayette ... $595,565

Mass. Lowell ... $549,937

Mass. Westfield ... $68,550

N. Y. Valley Stream ... $250,000

Utah. Tooele ... $279,414

Que. Mont. Bruno ...

▲ Que. Roberval ... $1,010,000

Donovan, Inc., 225 S. 15 St., Phila. $268,700. Bids 6/1. CD 5-26.

Tenn. Chattanooga—APARTMENT—Montview Apartments, Inc., c/o Harrison Smith & Associates, Chattanooga Bank Bldg., rejected bids May 26, apartment development. L. B. $408,778. CD 6-2, under LB.

CONTRACTS AWARDED

Calif. San Lorenzo (near Hayward)—RESIDENCES—Greenwood Corp., 854 San Mateo Dr., San Mateo, 44 residences, via Granada, Paseo Grande, Via Toledo and Via Malaga, to D. D. Hardman, 854 San Mateo Dr., San Mateo. $355,000.

Calif. San Jose—RESIDENCES—Frank Lanetti Co., Box 728, San Jose, 40 residences in Palos Verdes Terrace Unit, Precise Plans, Owner No. 2. $320,000.

Conn. Stepney—RESIDENCE—Hyde Ave., Mrs. Winifred Foster, Jane Bolthgood, Farm Road, Tyler Museum, Route 25, and Richard Ted Owner No. 31. $250,000.

Del. Wilmington—RESIDENCES—Edgewood Corp., 1 W. Market St., 20 residences in Edgewood Manor, Burns & Ellis, engineers, development, 1st of separate contracts. $250,000.

Fla. Tampa—APARTMENT—Atlantic Court, Inc., c/o Paul Smith, 201 Bay Shore Blvd., 212 S. Howe Ave., apartment. Owner bldg. $250,000.

Ill. Belleville—CHURCH—Immanuel Evangelical Church, Jos. P. McCormick, supt., Mission Rd. and West Main, Albert H. Zurkowski, Catholic Bishop of Belleville, 222 S. Third St., general contract, other trades and onsite orphanage bldgs., 1 story, 41x44 ft., and 28x76 ft., orphanage cottage, 1 story, 44x44 ft., and 21x21 ft., matrons residence, 1 story, 52x52 ft., girls dormitory and 1 story bldgs., 30x234 ft., and 42x68 ft., rectory, to David Bros., Staff & Supply Co., 424 Lebanon Ave. $553,563. Bids 6/6, awarded 6/12. CD 6-7.

▲ Ill. Chicago—ARMORY—Office of Chief Engineer, 2700-01 Marquette Bldg., Zone 2, 4 story, 220x462 ft., armory, to be used by Illinois Army National Guard, 104 N. Dearborn St., Chicago, to Hansell Elhott, Inc., 65 W. Adams St., Chicago. $2,500,000. CD 6-1.

Ind. Logansport—MUSEUM—Cass County Historical Society, 330 Woodlawn Ave., to Bruce Construction Co., Twin Falls. $350,000.

▲ Md. Chillum (br. Hyattsville)—APARTMENT—Chillum Heights, Inc., c/o Harry Weinberg, 1010 Vermont Ave., Washington, 2 story, 24 apartments, shopping center, and restaurant, Riggs Rd. and Northwest Branch, Lew Hancock Ave. and Jamestown Rd., to Hansell Elhott, Inc., 65 W. Adams St., Chicago. $3,000,000. Mar. 1, 1951.

Md. Kenilworth—APARTMENTS—Kenilworth Park Apartments, Inc., c/o Harry Weinberg, 1010 Vermont Ave., Washington, 2 story, 24 apartments, shopping center, and restaurant, Kenilworth Ave. and Douglas St., to Hansell Elhott, Inc., 65 W. Adams St., Chicago. $3,000,000. Mar. 1, 1951.

Mo. St. Louis—APARTMENT—Bldg. No. 1, 1100 Westmoreland Pl., Zone 5, 4 story, 24 apartments, brick, steel, reinforced concrete, 1 bldg., to Ely Construction Co., 7733 Forsyth Blvd., Clayton. $300,000. CD 4-12.

N. J. Beach Haven—RESIDENCE—Lewis Bldg., Beach Haven, 1 story, 1 apartment, Beach Haven, to Beach Haven Building Co., Beach Haven. $250,000.

N. J. Camden—APARTMENT—Home Manor, 1214 Haddon Ave., 12 apartments, development. $250,000.

N. J. Camden—APARTMENT—Bldg. No. 2, 1143 Haddon Ave., 12 apartments, development. $250,000.

N. J. Gloucester—APARTMENT—Bldg. No. 1, 234 Broadway, 12 apartments, development. $600,000.

N. J. Lumberton—APARTMENT—Bldg. No. 1, Main St., 16 apartments, development. $445,000.

N. J. Magnolia—APARTMENT—Bldg. No. 1, Evesham Rd., 12 apartments, development. $250,000.

N. J. Runnemede—APARTMENT—Bldg. No. 1, Pine Ave., 12 apartments, development. $650,000. Henry W. Terry, Moorestown, engr.

N. M. Albuquerque—CHURCH—Immanuel Lutheran Church, Rev. Hugo Lange, pastor, 1st Presbyterian Bldg. to Hugo Lange, Box 114. $448,170. Awarded 6/12.

N. Y. Howard Beach—RESIDENCES—Herman Homes, c/o Alwin Eastern, owner, 116-10 Queens Blvd., Forest Hills, 6 duplex and 6 single family dwellings, Rockaway Blvd. and 164 Ave., 164 Ave. and Lower Bay. $550,000.

▲ N. Y. New Garden—APARTMENT—Queens Country Garden, 110 Park & Main, to Court St. Hospital, Zone 2, 432 family garden apartment on 11 site site bounded by Main Ave., 138 Ave., Park Ave. and Union Ave. $4,000,000. A. W. Lawrence, 1260 87 St., Jackson Heights, owner.

N. C. Charlotte—CHURCH—First Presbyterian Church, Dr. Charles F. S. Kennedy, pastor, 200 W. Trade St., Church, addn. & alterations to, to Dantel, Inc., 209 N. Church St. $249,000. Bids 6/6.

O. Columbus—HOUSING—Northern Terrace, Inc., 375 S. High St., twenty-seven 1 story, frame dwellings, Wescott Ave. and Nicholas Ave., to be built. Approx. $250,000.

Pa. Erdenheim (Phila. P. O.)—RESIDENCES—Cheyney Downs, Inc., 838 Bankers Security Bldg., Phila., residential development, Longfellow Rd. and Auxiliary Rds., separate contracts. $250,000.

Pa. Harrisburg—APPLIANCE STORE—Penna. Water & Power Co., 2nd & Reily Sts., Harrisburg, 1 story, 210 ft. frontage, Dr. 228,000 cu. ft., shopping center, east of North Harris High School on 25 St. (Lawson Delaney, 25 & Reily Sts.). $400,000. CD 11-24.

Pa. Norristown—RESIDENCES—Fred K. Lanser, 854 W. Walnut Lane, Phila., residential development, 1st separate contracts. $250,000.

Pa. North Hills—RESIDENCES—Edward G. Lentz, Lentz Bldg., residential development, various sections, separate contracts. $250,000.

Pa. Oreland—RESIDENCES—George W. Carson, Camp Hill Rd., Whitemarsh, residential development, Overlook Rd., 1st separate contracts. $250,000.

Pa. Oreland—RESIDENCES—Harold A. Bertram, Bertram Bldg., Abington, residential development, various separate contracts. $448,000.

Pa. Phila.—RESIDENCES—Construction F. Brumbaugh, 1868 Easton Ave., residential development, 1st of separate contracts. $250,000.

Pa. Phila.—RESIDENCES—Malvern Builders, and Thos. Bibb, residential development, Newton St., separate contracts. $250,000. T. Lithan Pursell, 1325 Pine St., architect.

Pa. Phila.—RESIDENCES—Northwood Estates, Homes, 2300 Allegheny Ave., residential development, Nanco Ave. and Cheltenham Ave., 1st separate contracts. $250,000.

Pa. Phila.—APARTMENT—Owner, c/o David Rosenberg, 1411 Walnut St., apartment, separate contracts. $250,000.

Pa. Phila.—CHURCH—Community Church of Overbrook, 5 Conshohocken Ave., church, chapel and addn., Overbrook Ave. and Thirteen Ave. Approx. $500,000. CD 4-24.

Pa. West Conshohocken—RESIDENCES—Morton P. Wells, 1014 Washington Ave., residential development, various separate contracts. $250,000.

Pa. Phila.—APARTMENT—Owner, c/o Louis Grow, 1411 Walnut St., apartment,

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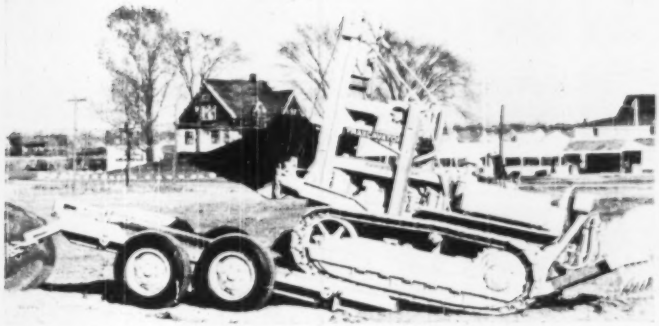

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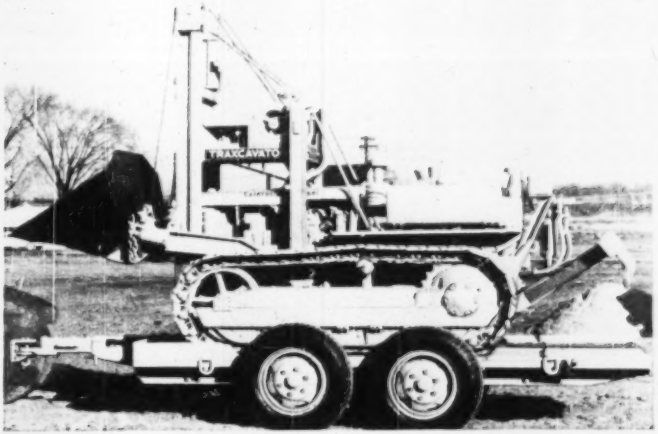

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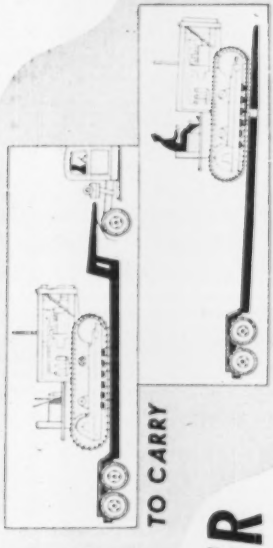

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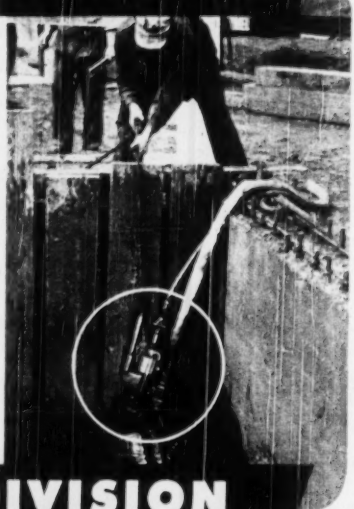

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PORTABLE SUMP PUMP

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Write for Bulletin SP-849

CLECO DIVISION
of the REED ROLLER BIT COMPANY
P. O. BOX 2119 HOUSTON 1, TEXAS

(Continued from page 64)

Colorado RURAL SYSTEM—Bids Aug. 7 at Rm. 1565, B.A. 7-11, U. S. Courthouse, Denver, for 1,000 mi. rural supply lines in Lincoln, Kit Carson and Cheyenne Counties. Approx. $300,000. C. B. Eng. Co., 25 S. Grove St., Denver, engr.

+ Ky., Fort Thomas—SPRINKLER SYSTEM, B.A. 7-14, Veterans Administration Bldg., Wash. 25, D. C., or Veterans Adm. Hospital, Bldg. 27, Veterans Adm. Hospital, Zone 50522. Proj. 16-5063.

+ Arizona—SWITCHES—SWITCHES, B.A. 7-28, Bureau Reclamation, Int., Interior Bldg., U.S. Denver Federal Center, Denver. Proj. 753-D, Switches for Hoover-Davis-Parker Davis Dam Proj., Serv. 324.

L. N. McCreary, Ch. engr.

Texas—OIL PIPE LINE—Bids August 1 at Humble Pipe Line Co., Humble Bldg., Houston, for 8 in. crude oil pipe line from near Ranchester to area of Fort Chadbourne. Proj. $210,000. CD 8/24/49.

SOON LETS CONTRACT

Fla., Miami—SWIMMING POOL—Julian Strand, Hotel Dev. Co., 1300 B. Polenzky, archt., soon lets contract, 450 N. E. 18 St., swimming pool.

LOW BIDDERS

Miss., Shubuta—NATURAL GAS SYSTEM—Chickasaway Natural Gas Co., Inc., let $1,000,000 gas system from Cook Coste Co., Standard Life Bldg., Jackson, $600,646.

CONTRACTS AWARDED

▲ Calif., San Francisco—WHARF—Bd. State Harbor Comrs., Ferry Bldg., award contracting Piers 32 and 32-1/2 to Ben C. Gerwick, Inc., 112 Market St., $1,650,000. Bids 5/31, CD 6/6, under LB.

Mass., Boston—TUNNEL—Metropolitan Transit Auth., Atty. Gen. Asa Adams, Boston, awards Sumner Tunnel Extension to J. A. Terenzio Co., 15 Bay St., Dorchester, $904,000. Bids 5/18, CD 6/5, under LB.

Tenn., Chattanooga—SEWER—Morgan Bros. Co., contractor, former lower Broad St. to E. A. Warren Co., 747 E. 11 St., Approx. $150,000. Bids 6/7, CD 6/2.

Tex., Gainesville—SWIMMING POOL, PARK—City, re-let con. swimming pool, $56,000, park, Approx. $50,000. Purchase and Hine Wallis, Inc., Hedrick, Fort Worth, Natl. Bldg., Fort Worth, engr.

▲ N. S., Sydney—PARK IMPROVEMENT—Dept. of Canada Lands, Bldg., Ottawa, let separate sections of Cabot Trail, Cape Breton Highlands National Park, to Bruno Bergeron, Inc., Sydney, and Ben Breton Ltd., 7 Russell St., Halifax, $1,086,570. CD 4/20.

PROPOSED PROJECTS

WATER SUPPLY

Idaho, Blackfoot—City, City Hall, water sys. improv., $125,000. E. B. Steele, 124 N. E. Main St., consult. engr.

▲ La., Hahnville—St. Charles Parish Waterworks Dist. No. 1, Courthouse, advt. bids June 6, W. W. Overstreet, $1,165,000. CD 5/27.

Neb., Lincoln—City, City Hall, water main from 16 St. to 26 and Meadow Sts., $175,000. D. L. Ericsson, city engr. CD 5/17/45.

▲ Alta., Calgary—City, City Hall, 4 mil. reservoir, 14 St. Northeast, north of 30 Ave., $180,000; mil. reservoir, 24 St. and 34 Ave. W., $1,200,000; pipe & valves, 1193 Bay Sts., Toronto, Ont., engrs. CD 3/28.

SEWERS, WASTE DISPOSAL

Idaho, Blackfoot—City, City Hall, sewer improv., $251,000. E. B. Steele, 124 N. E. Main St., consult. engr. CD 10/1/49.

Mo., Carrollville—Sewer Dist., Clarence A. Peterson, engr., 322 Chestnut St., St. Louis, plans, specs. & estimates, sewage disposal plant, $100,000; sewers and sanitary sewer extensions, $100,000.

Mo., Glendale (St. Louis 22 P. O.)—City, City Hall, 9214 N. Lindbergh Blvd., Hazelwood, $400,000 bonds sch. of June 28; sanitary sewer, Frederick Hoff, engr. CD 4/28.

▲ O., Cleveland—City, City Hall, Lakeside and E. 6th, conveyances at downtown Lakefront Airport, $1,000,000. Dietz, Agg & Fitz, engrs. CD 11/21.

O., Oak Harbor—Village, intercommunicating sewers and disposal, $420,000. Lockner, Fetter & Associates, Sylvania, engrs. Tenders, engrs. and owners, CD 1/16/50.

BRIDGES

Ill., Chicago—City, City Hall, converting movable bridge to fixed type, Southbranch over North Branch of Chicago River, Diversey Blvd., Contract to Bennett Contracting Co., Inc., $400,000.

Que., Montreal—Harbor Comrs., Jacques Cartier Pier, 4 trusses at Jarry St., $150,000. Henry Gelinas, City Hall, city engr.

STREETS AND ROADS

Ill., Chicago—City, City Hall, Zone 2, paving 119 St. from Ashland to Halsted, $350,000. CD 4/25/50.

▲ North Carolina State Hy. & Pub. Wks. Comm., Raleigh, N. C.
Alamance and Orange Counties ... $1,500,000
Davidson Co. ... $600,000
Edgecombe and Halifax Counties ... $600,000
Franklin and Wake Counties ... $100,000
Johnston and Wake Counties ... $250,000
McDowell Co. ... $1,000,000
Mecklenburg and Cabarrus Counties ... $1,000,000
Pitt Co. ... $280,000
Pitt and Greene Counties ... $330,000
Randolph and Guilford Counties ... $340,000
Rockingham and Guilford Counties ... $2,000,000
▲ Pennsylvania State Hy. Dept., Harrisburg
Dauphin Co. ... $2,500,000
S. D. Winner City paving ... $125,000

AIRPORTS

▲ Tex. Houston AIRPORT, City of Houston, Houston. Sec. 2 of Municipal Airport ... $5,000,000

LATIN AMERICA

Mexico Acapulco ... $925,000
Mexico Mexico City ... $700,000

PUBLIC BUILDINGS

▲ Calif., San Mateo ... $1,300,000
▲ Calif., Santa Ana ... $1,765,000
Colo. Englewood ... $875,000
Ill. Berkeley ... $570,000
▲ Ind. Newport ... $5,000,000
▲ Kan. Wichita ... $2,250,000
▲ Wis. Jackson ... $1,500,000
Md. Normandy ... $450,000
▲ N. Y. Baldwinsville ... $2,152,000
▲ N. Y. Great Neck ... $1,000,000
N. C. Durham ... $900,000
Okla. Stillwater ... $400,000
▲ Okla. Stillwater ... $5,000,000
Pa. Emlenville ... $368,400
... $357,600

▲ Pa. Harrisburg ... $6,000,000
Pa. Phila. BARRACKS ... $480,000
Pa. Phila. AARON ... $800,000
▲ Pa. Scotland ... $1,200,000
... $425,000 ... $250,000
Va. Fairfax ... $480,000
▲ Wash., Vancouver ... $1,500,000
▲ Alaska, Juneau ... $1,260,000
▲ Ont., Niagara Falls ... $1,500,000
▲ Sask., Saskatoon ... $1,400,000

COMMERCIAL BUILDINGS

▲ Conn., New Haven ... $5,000,000; ... $400,000 ... $500,000 ... $2,250,000 ... $3,500,000
Idaho, Coeur d'Alene ... $500,000
Ia., Spencer ... $512,852
Md., Baltimore ... $475,100
Md., College Park ... $500,000
▲ Mo., Clayton (St. Louis P.O.) ... $1,000,000
Neb., Omaha ... $650,000
▲ N. J., Hillside ... $1,000,000
▲ N. J., West Orange ... $49,000,000
N. Y., Amsterdam ... $463,000
▲ N. Y., Elmhurst ... $1,150,000
▲ N. Y., Rego Park ... $1,725,000
▲ N. Y., Rego Park ... $1,250,000
N. C., Charlotte ... $600,000
▲ N. C., Durham ... $1,000,000
N. C., Hickory ... $494,961
Pa., Lewisburg ...

▲ Pa., Pittsburgh ... $1,500,000
▲ Tex., Fort Worth ... $1,250,000
▲ Tex., Galena Park ... $1,050,000
▲ Tex., Houston ... $650,000; ... $675,000
Tex., Hanlon ... $490,000
Tex., Wichita Falls ... $750,000
Ont., Portsmouth ... $603,000
▲ Ont., Toronto ... $1,000,000
Que., Westmount ... $700,000

INDUSTRIAL BUILDINGS

▲ Ga., Brunswick ... $5,000,000
Ga., Lithonia ... $500,000
Ind., Indianapolis ... $350,000-$500,000
▲ Kan., Kansas City ... $500,000
▲ La., Blanchard ... $450,000
Mo., Kansas City ... $500,000
Neb., Sidney ... $500,000
N. Y., Long Island City ... $300,000
O., North Olmsted ... $500,000
Pa., Coatesville ... $500,000
▲ Tenn., Memphis ... $2,000,000
▲ Tex., Freeport ... $5,000,000; ... $8,000,000; ... $3,500,000; ... $2,750,000; ... $4,000,000; ... $750,000
▲ Ont., Niagara Falls ...

UNCLASSIFIED

Kentucky — RURAL DISTRIBUTION LINES ... $600,000
▲ New York and New Jersey ... $3,585,082
N. C., Greensboro ... $650,000
Pa., West Chester ... $625,000
Wyoming ... $550,000
▲ Ont., Toronto ... $3,000,000
Ont., Toronto ... $500,000

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

N. D., Cavalier ... $145,766

Ore., Portland ... $455,030

CONTRACTS AWARDED

Md., Baltimore ... $2,679,011

S. C., Georgetown ... $126,370

SEWERS, WASTE DISPOSAL

BIDS ASKED

Conn., Hartford ... $109,402

CONTRACTS AWARDED

Calif., Long Beach ... $623,415

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

July 5
Florida ... $254,268
July 6
Iowa ... $57,608
Washington ... $107,309

July 7
Kentucky ... $47,126
North Dakota ... $87,214
July 12
New York ... $678,374

July 26
Louisiana ... $466,359

CONTRACTS AWARDED

Ont., Wallaceburg ... $650,000

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

July 5
Maryland ... $666,514
Massachusetts ... $72,906
July 6
Iowa ... $98,507
Washington ... $92,429

July 7
Kentucky ... $50,364
Minnesota ... $208,506
North Dakota ... $78,868
Pennsylvania ... $307,531

July 12
California ... $243,943
Louisiana ... $252,933
New York ... $50,540

July 26
Louisiana ... $150,458
July 31
California ... $198,035

LOW BIDDERS

▲ Pennsylvania ... $105,755

▲ Tennessee ... $57,878

$57,134

$89,903

$129,909

$35,006

$270,092

$369,961

▲ Virginia ... $192,956

$297,491

$409,077

$376,974

$51,956

CONTRACTS AWARDED

▲ New York—Bureau Contracts & Accounts, Albany, awarded 3 contracts for 24 federal highway projects and bridges, structures, etc. to Bird Eng. & Constr. Co., McKinley Bldg., Buffalo, $1,002,537. Bids 5-11-50.

† North Carolina—Bureau Fld. Reps. Dist. Commrs., 1400 Colonial Pipe Arlington, Va., awarded contract for piling, 3,12 mm. feet, 12 ft. 6 in. to 30 ft. long, 137 ... Bids 5-8-50. ... Bldg., Norfolk, Va., awarded 4 contracts for

Horse Dam, Hungry Horse Project, Spec. 3099, C. N. McClellan, ch. engr.

LOW BIDDERS

† California—Bureau Reclamation, Dpt. Interior, Treasury, June 15, earthwork, structures, floodgate structures, etc., in Gates No. 1 and No. 2 in Delta Cross Cut, Contra Costa County Project, near Walnut Grove, Sacramento River, Central Valley Project, near Walnut Grove, Sacramento County; George Pollock Co., Inc., W. S. Clements, Inc., $644,190. CD 5-14.

† California—U. S. Eng., Wright Bldg., Sacramento, June 15, channel improvements and levee work along Butte Creek from Afbeck to Pennington Slough, Glenn-Butte Counties; Spec. 07-147; B.I. Moore, Inc., Los Angeles, $702,987. CD 4-27.

▲† Colorado—Bureau Reclamation, Dpt. Interior, Denver, June 14, 2 earthfill dams, Carter Lake reservoir, enl. Carter Lake No. 1 and Carter Lake No. 2, Larimer County; Boyd Thompson Pipe, Inc., and Thompson Bros. Const. Co., Monterey, Calif., $2,309,350. Est. $3,700,119. CD 4-13.

▲† Ky., Louisville—U. S. Eng., 836 W. Broadway, June 16, 2 sewage treatment plants, Beargrass Creek and Pond Creek Basins, Jefferson County; Walsh Const. Co., Davenport, Iowa, $1,562,169. Est. $1,542,189. CD 5-12.

† Louisiana—U. S. Eng., Dist. of Pretoria St., New Orleans, June 21, 2 units each in Pontchartrain Basin, Lake Pontchartrain, approx. 15 mi. south west of Kraemer, Orleans Parish; Wm. Passon & Co., Inc., Metairie, La., $474,475. Est. $ 17.

▲ Minn., Minneapolis—U. S. Eng., 1217 U. S. Post Office & Custom House, June 21, 2 units, 4 & 11 stories, 2 basements, 21,000 cu. yds., Anthony Falls Project, Mississippi River, Minneapolis, Hennepin County; Anthony Falls Const. Co., Minneapolis, $5,508,000. Est. $5,508,000. CD 5-17.

† Missouri—U. S. Eng., Dist. Engineer, Custom House, Kansas City, Mo., June 21, 2 units, Harry S. Truman Reservoir, Pomme de Terre River, Hermitage, Hickory County; Wayne Construction Co., Fort Scott, Kan., $435,160. Est. $477,000. CD 5-17.

† Nebraska—U. S. Eng., 1709 Jackson St., Omaha, June 21, 2 units, Harlan County Reservoir, Republican River, Harlan County; Kenneth S. Amos, Bassett, Neb., $433,940. Est. $459,792. CD 5-24.

† Washington—Bureau Reclamation, Dpt. Interior, Ephrata, June 15, 2 concrete pipelines, 4 concrete pipe laterals, 1 concrete pipe lateral, 1 concrete pipe sublateral, 1 concrete pipe drain, 1 concrete pipe sublateral, 1 concrete pipe drain, 1 concrete pipe sublateral, 1 concrete pipe drain

$619,842 ... Ky. Hopkinsville ... $870,000 ... $1,121,000 ... $1,200,000 ... $1,487,044 ... $1,247,100

COMMERCIAL BUILDINGS

BIDS ASKED

Ala., Birmingham ... Ark., Millett ... Tex., Fort Worth ... Calif., Los Angeles ... Tex., Fort Worth ... Wis., Milwaukee ... APARTMENT ...

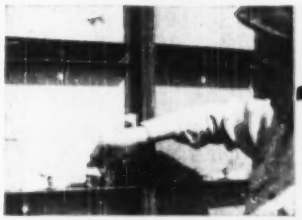
SOON LETS CONTRACT

N. H., Hanover ... N. Y., Flushing ... N. Y., New York ... Okla., Tulsa ...

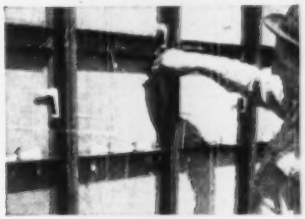
LOW BIDDERS

Ala., Decatur ... $1,500,000 ... N. C., Greensboro ... $2,256,000 ... Va., Burlington ...

SIMPLER! COST LESS! FASTER!



Remove Key-Wedge (already attached to forms).



Insert key part in slots of panel and tie. Drive in wedge part of key wedge.

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FORMWORK IN ITS SIMPLEST FORM

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WALL TIE

Put liner hook in hole of wall tie. Install from 2" x 4" and tighten with wedge.

Here is, without doubt, "the best form since Venus". And the beauty of it is that these All-Steel or Plywood-faced Steel Forms come in panels in widths from 5" to 24" and lengths from 4' to 8'. Thus, with the patented Ties shown, they can be quickly, easily locked together without nails and any panel quickly removed at any point without damage. Use for footings, walls, pilasters, columns, slabs. Rigid, strong. Again we say, look at these Ties and Fasteners—simplicity itself! We can't cover all details here—write and let us send you full information and sample parts and decide for yourself.

Keys slip speedily into position joining tie and panels in one operation. Single panels can be readily removed, at any time, with maximum ease and without disturbing other panels in the section.

New Type ... non-separable waler hook (patent pending) speeds erection, reinforces wall tie and eliminates the annoyance of lost keys and wedges.

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units, 1 - h, $1,640,839. Will readvertise CD 6/15, under LB.

CONTRACTS AWARDED

▲ Calif., Sacramento—HOUSING—Brick, Lehan & Hayes, 607 East Sutter-Butte Bldg., Dallas, Tex., architect, manage and finance 1,000 low-rental units in Mather Air Force Base. Owner is U.S. $7,000,000. Joseph H. Gaylord, 1222 Neil P. Anderson Bldg., Fort Worth, Tex., architect. CD 4-7.

▲ Conn., Milford—HOUSING—W. Ward Lewis, 270 Orange St., New Haven, architect, 21 Detroit St., 100 dwellings, new roads, drainage, area walks and recreation areas, Woodmont Road and Seabreeze Ave. Owner builds. $1,000,000. CD 4-4.

▲ D. C., Wash.—HOSPITAL—Architects, room 13, 1145 N. W. 5 story, reinforced concrete addition to hospital and remodeling present building. Owner is Sisters of Mercy, Mercy Hospital, 1145 N. W. 5 St., Miami, Fla. $2,043,000. Bids 4-27, lowest bidder to be selected 4-27, under LB.

Ill., Chicago—OFFICE—Raymond Mark, 470 N. Wabash, Zone 11, 6 story, burnt office, 19 apartments, 134 N. La Salle St., Zone 2. $800,000. CD 4-7.

▲ Mo., Springfield—HOSPITAL—St. Johns Hospital, c/o Sisters of Mercy, Mercy Hospital, 213 Carew St., general contract 6 story, burnt, reinforced steel hospital, nurses home and boiler house. Main and Nichols St., to McDaniel Bros., 1904 University St., St. Paul 4, Minn. $4,042,000. Dismantling, heating by Co. Wallace & Gilman, Inc., 2224 Commerce St., Dallas, Tex. $1,113,685. Bids 5-17, CD 4-5, under LB.

▲ N. J., East Paterson—HOUSES—Gordon Homes, c/o Irwin Gerber, archt., 1390 Raymond Blvd., Newark, 100 one family houses, 4 Rooms and Willow Aves., Owner builds. $2,000,000.

N. J., Elizabeth—APARTMENT—Irwin Gerber, architect, 1390 Raymond Blvd., Newark, 4 story, 24 apartments, 246-252 Elizabeth Pl., Owner builds. $392,600.

▲ N. J., Fair Lawn—HOUSING—Irwin Bluestein, c/o Irwin Gerber, archt., 1390 Raymond Blvd., Newark, 300 dwellings, 300 housing, Radburn Rd., Owner builds. $3,000,000.

▲ N. J., Paramus—HOUSES—Bluestein Avery, c/o Robert Eaton, archt., Elliott Rd., Harrington Park, 100 one family houses, Elliott Rd., Forest Ave., south of Midland Ave., Owner builds. $1,500,000.

N. J., Paramus—HOUSES—Bluestein Avery, c/o Fred W. Hilgen, Summit, 4 houses, Midland Ave., Trinity Pl. and Family Circle, Forest Ave., Midland Ave., Owner builds. $800,000.

N. J., Rahway—HOSPITAL—Dr. Curtis Cord, c/o Cord, Horne & Mackie, archts., 314 - 14 St., New York 18, N. Y., 100 one family houses, Madison Hill Rd., Owner builds. $500,000.

▲ N. J., River Edge—HOUSES—Wm. Scott Park II, Eaton, and Eastwood, Hartford, Conn., 100 one family houses, Kinderkamack Rd., Forest Ave., Twenty Ln., Owner builds. $1,500,000.

▲ N. Y., Bayside—APARTMENT—Louis Mastro, 1 Union Square, New York, 14 story, 200 apartments, Union Turnpike and Bayside Ave., Owner builds. $16,000,000.

▲ N. Y., Franklin Square—HOUSES—Levitt & Sons, Hempstead, 1,000 dwellings, Hempstead Turnpike, Owner builds. $1,300,000.

▲ N. Y., Garden City—HOUSES—Levitt & Sons, Hempstead, 1,000 dwellings, Stewart Ave., Owner builds. $3,000,000.

▲ N. Y., Massapequa Park—HOUSES—Levitt & Sons, Hempstead, 1,000 dwellings, Hempstead Turnpike, Owner builds. $2,500,000.

N. Y., New York—APARTMENT—Emery Roth, 200 Park Ave., New York, 15 story, 200 apartments, 1st Ave. and 20 St., Owner builds. $900,000.

N. Y., Old Westbury—HOUSES—Levitt & Sons, Hempstead, 1,000 dwellings, Jericho Turnpike, Owner builds. $3,000,000.

▲ N. Y., Roslyn—APARTMENT—Emery Roth, 200 Park Ave., New York, 15 story, 200 apartments, Northern Blvd., Owner builds. $1,000,000.

N. Y., Seaford—HOUSES—Levitt & Sons, Hempstead, 1,000 dwellings, Merrick Rd., Owner builds. $3,000,000.

▲ N. Y., Valley Stream—HOUSES—Levitt & Sons, Hempstead, 1,000 dwellings, Hempstead Turnpike, Owner builds. $3,000,000.

▲ N. Y., Valley Stream—HOUSES—Levitt & Sons, Hempstead, 1,000 dwellings, Hempstead Turnpike, Owner builds. $3,000,000.

▲ N. Y., Wantagh—HOUSES—Levitt & Sons, Hempstead, 1,000 dwellings, Wantagh Ave., Owner builds. $3,000,000.

▲ O., Akron—SHOPPING CENTER—F. E. Rottmayer Estate Realty Corp., 33 W. Mill St., shopping center, Canton Rd. between Cleveland and Leland Aves., in East Akron, to Rottmayer Realty Co., 33 E. Bartges St. Approx. $2,000,000.

▲ O., Cincinnati—APARTMENT—Washington Constr. Co., George Wenning, mgr., 2610 Keith Bldg., two 5 story basement apartments, one 144x210 ft., and one 144x170 ft., reinforced concrete frame, concrete floor, brick. $1,650,000.

▲ O., Dayton—HOUSING—U. S. Air Force, Off. R.E.A. Officer, Patterson Field, Fairborn, O., 2 bedroom, garage and fence, 1,000 unit two story garden type apartment development near Wright-Patterson Air Force Base on area bounded by Spinning Rd., Shiloh Springs Rd., Dayton-Xenia Rd. and Kemp Rd., to Lowell Construction Co., Inc., 1111 W. Main St., Troy, O. Approx. $9,000,000. Hubbell, Treiber & Associates, 1119 N. W. Main St., Oklahoma City.

▲ O., Hamilton—HOMES—Lyons Homes, Inc., 12 and 13 St., two 1 story 4 family frame homes, separate contracts. $2,340,000.

O., New Miami—RESIDENCES—Robert Wheelwright, 41 Boudinot Bldg., ninety-two 1 story 6 room and 2 bath frame residences, separate contracts. $470,000.

O., Reading—RESIDENCES—Robert Reitzel, 1504 Westview Dr., eighty 1 story, burnt, frame residences, separate contracts. $800,000.

▲ O., Rocky River—HOUSING—John Sinclair, 2101 Riverside Building, ninety homes to Lauser Blvd., Hilliard Wagner and Center Ridge Rds., on 2 new streets, 21x side park, separate contracts. $1,500,000.

▲ Tex., Bergstrom Field (P. O. Austin)—HOUSING—Air Installation Office, Bergstrom Field, Austin, construct, manage and finance military housing at Hubbard & Avenue "B" Manifesting Section, Bldg. 3, Austin. Est. $4,000,000. CD 4-5.

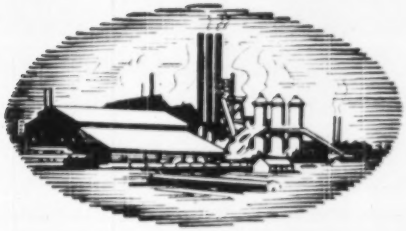
Tex., Houston—DWELLINGS—Avenue Development Corp., 5214 Avenue St., 100 dwellings, Mex Sec. 1, Broadway Terrace to Genoa Building Corp., 5214 Avenue St. Approx. $875,000. CD 4-17.

▲ Tex., Houston—APARTMENTS—Charmaine Estates, c/o W. E. Robertson, Jr., 1337 Gardenia St., Unit 2, 100 dwellings, units in portion 130 x 96 feet at Chimney Rock Rd. near Homes Rd. & Bird Rd., to Robertson Realty Co., owner. Approx. $1,100,000. CD 4-6.

Tex., Pasadena—DWELLINGS—W. E. Robertson, Jr., 136 dwellings, Owner builds. $816,000. CD 5/19.

Tex., San Antonio—DWELLINGS—Boyd K. Tyrrell, Kenneth Dixon, 125 dwellings, Red Fox Rd., Owner builds. Approx. $750,000. CD 4-8.

▲ Wis., Milwaukee—HOSPITAL—Zimmerman & Saxe, Architects, 611 N. Broadway, 14 x 115 ft., 4 story, 14 x 115 ft., 4 story, 14 x 115 ft., 4 story



1900 ★ THE MIRACLE OF AMERICA ★ 1950

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America has set an amazing record of progress in 50 years—but a moment in the history of civilization. A record unequalled by any other political or economic system.

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- ☆ Since 1900 we have more than doubled the output each of us produces for every hour we work.
- ☆ Since 1900 we have increased our annual income from less than $2400 per household to about $4000 (in dollars of the same purchasing power), yet . . .
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Bids: July 6, 1950 (847)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for CONTRACTS NOS. 19-19A and 19B.

The work to be performed under these Contracts includes furnishing, placing and compacting approximately 6,000,000 cubic yards of materials in embankments, stabilizing existing ground by the use of vertical sand drains, excavating portions of existing embankment placed as overload and depositing the material so excavated on the embankment, furnishing and placing about 1,000,000 cubic yards of concrete pavement, breaking up existing paved crack, demolishing existing timber and concrete bridges, paving at indicated locations, providing underdrains and subdrains and other incidental work in connection with the construction of the New Jersey Turnpike, Woodbridge Extension, over the extra Railroad of New Jersey in the City of Elizabeth, Union County, to Turnpike Station over Central Railroad of New Jersey in the City of Newark, Essex County, New Jersey.

Principal items of work for Contract No. 19A and 19B:

Item	Unit	Quantity
Clearing and Grubbing	Lump Sum	1
Earth Excavation	Cu. Yd.	1,000
Rock Excavation	Cu. Yd.	1,000
Sand Drains	Lin. Ft.	1,000,000
Sand Blanket	Cu. Yd.	1,000
Sand Backfill	Cu. Yd.	1,000
Concrete Pavement	Sq. Yd.	1,000
Concrete Bridges	Cu. Yd.	1,000
Reinforcing Steel	Lb.	1,000,000
Structural Steel	Lb.	1,000,000
Underdrains	Lin. Ft.	1,000
Subdrains	Lin. Ft.	1,000
Guard and Keep Fences	Lin. Ft.	1,000
Guard and Keep Fences	Each	1,000
Concrete Pavement	Sq. Yd.	1,000
Concrete Bridges	Cu. Yd.	1,000
Reinforcing Steel	Lb.	1,000,000
Structural Steel	Lb.	1,000,000
Underdrains	Lin. Ft.	1,000
Subdrains	Lin. Ft.	1,000
Guard and Keep Fences	Lin. Ft.	1,000
Guard and Keep Fences	Each	1,000

Each set of bidding contract Nos. 19-19A and 19B will be furnished for $5.00 for each set upon application to the Authority. The payment will not be refunded and Contract documents are not required to be returned. Plans showing grading cross-sections may be examined at the office of the Authority or at the office of the Engineer.

Proposals must be made upon the standard proposal form in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority, for a proposal bond for each bid for not less than 5 percent of the amount of the proposal bid but not less than $5,000 or not more than $100,000 or bid must be deposited with proposal on or before the hour named for opening of the proposal. Forms for the proposal bond of the form to be used for the financial statement and plans and experience statement to be submitted with proposal, and special addressed envelopes are furnished in detailed form with the contract documents.

The Contracts will be awarded or proposals rejected within fifteen (15) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

June 27, 1950

Bids: July 18, 1950 (846)

Strengthening & Repairs to Spans

SEALED proposals addressed to the Mayor and Trustees of the Village of [illegible] will be received at the office of the Village Clerk in the Municipal Building, [illegible] until 8:00 P.M. prevailing time on TUESDAY, JULY 18, 1950, at which time and place they will be publicly opened and read aloud.

"STRENGTHENING & REPAIRS TO WEST AVENUE SPANS OF SECOR ROAD"

will be received at the office of the Village Clerk in the Municipal Building, [illegible] until 8:00 P.M. prevailing time on TUESDAY, JULY 18, 1950, at which time and place they will be publicly opened and read aloud.

Proposals must be made on the forms [illegible] and must be accompanied by a certified check or bid bond in the amount of 5% of the total bid. Successful bidder must furnish performance bond.

The Board reserves the right to reject any or all bids or to accept any bid should it be deemed for the interest of the Board to do so.

BOARD OF WATER COMMISSIONERS
[illegible]
Secretary

Bids: July 13, 1950 (848)

Elevated Steel Water Tank

Sealed proposals will be received by the City Manager of the City of Fort Lauderdale, Florida, at his office in the City Hall, Fort Lauderdale, Florida, until 2:00 P.M. Eastern Daylight Saving Time, on July 13, 1950, at which time and place they will be publicly opened and read aloud.

Proposals must be made upon the standard proposal form in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority, for a proposal bond for each bid for not less than 5 percent of the amount of the proposal bid but not less than $5,000 or not more than $100,000 or bid must be deposited with proposal on or before the hour named for opening of the proposal. Forms for the proposal bond of the form to be used for the financial statement and plans and experience statement to be submitted with proposal, and special addressed envelopes are furnished in detailed form with the contract documents.

The Contracts will be awarded or proposals rejected within fifteen (15) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

June 27, 1950

Bids: July 13, 1950 (848)

Raising Existing Earth Dam and Appurtenant Work

AT RESERVOIR NO. 5,
BRISTOL, CONNECTICUT

Sealed proposals for raising existing earth dam and constructing spillway, dike, highway and highway bridge and appurtenant work at Reservoir No. 5 in the City of Bristol, Hartford County, Connecticut, will be received by the Board of Water Commissioners, City of Bristol, Connecticut, at the office of the Board, 129 Riverside Avenue, Bristol, Connecticut, until 2:00 P.M. Eastern Daylight Saving Time, on Thursday, July 13, 1950, at which time and place they will be publicly opened and read aloud.

Work includes about 25,000 cu. yd. of earth embankment.

Contract documents and drawings may be examined and obtained at the above office or from Metcalf & Eddy, Engineers, Old State Building, Boston, Massachusetts, upon deposit of $10.00 which will be refunded when contract documents are returned in good condition within thirty days after award of bid.

Bid security, certified check or bid bond in an amount of 10% of total bid. Successful bidder must furnish performance bond.

The Board reserves the right to reject any or all bids or to accept any bid should it be deemed for the interest of the Board to do so.

BOARD OF WATER COMMISSIONERS
[illegible]
Secretary

Continued on page 231

CONTRACTORS WATCH THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

U. S. Government
(Continued from page 74)

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS, Foot of Prytania Street, New Orleans, La.—Sealed bids will be received in this office until 11:00 a.m., C.S.T., July 11, 1950, and then opened, for furnishing labor for superstructure of gated portions of Morganza Control Structure, in the New Orleans District. The principal features included are approximately 130,000 cubic yards concrete; 1,000,000 lbs. reinforcing steel; 11,000 lin. ft. Portland cement grout curtain; structural steel; 2 sets electrically operated hoisting machinery; miscellaneous other work including excavation and backfill, drainage system, and installation of 127 steel gates. Further information on application. (1502)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (specifications No. 7761) will be received at the Bureau of Reclamation, Bismarck, North Dakota, July 13, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Rights-of-Way Clearing, Lake Sakakawea Reservoir, Stage 1. The work is situated near Rugby, Devils Lake, and Jamestown, North Dakota. Principal items are approximately:

	Sched. 1 Rugby	Sched. 2 Devils Lake	Sched. 3 Jamestown
Excav.	900 cu.yds.	700 cu.yds.	5,000 cu.yds.
Farm and land crops	225 bldgs.	80 bldgs.	780 bldgs.
Farm and pasture fences	8,000 lin. ft.	14,000 lin. ft.	45,000 lin. ft.
Farm and ranch structures	One	One	One

Installing misc. elec. equip. in all three substations, and other work.

Time allowed for completion will be 270 days for each schedule. Bureau of Reclamation, Bismarck, North Dakota, or Building 1A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (1503)

OFFICIAL PROPOSALS

Bids: Dec. 6, 1950 (1345)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for

CONTRACT NO. 21

The work to be done under this Contract includes the construction of the main line and superstructure of the Erie Railroad and Lackawanna Railroad grade separation structures and all appurtenant work, all in connection with the construction of the New Jersey Turnpike, in the town of Secaucus, Hudson County, New Jersey.

Principal items of work include:

Open Excavation Exclusive of Rock ... 50,000 Cu. Yds.
Piling ... 12,000 Lin. Ft.
Concrete ... 12,000 Cu. Yds.
Reinforcement Steel ... 1,400,000 Lbs.
Structural Steel ... 2,000,000 Lbs.
Metal Railing ... 2,500 Lin. Ft.

Proposals will be received at the office of the New Jersey Turnpike Authority, 50 Prospect Street, Trenton, New Jersey, prior to 10 o'clock, D.S.T., on the morning of July 6, 1950, and thereafter in the Ivory State Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, prior to 11 o'clock A.M., D.S.T., on the same day, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plan and equipment.

Contract documents may be seen and may be obtained by prospective bidders from the Authority at the office of the New Jersey Turnpike Authority, Prospect Street, Trenton, New Jersey, and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 11 Liberty Street, New York, New York.

Contract documents will be furnished for $ ... or for each set upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

Proposals must be made upon the blank and proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike and must be enclosed in sealed opaque envelopes bearing the name and address of the bidder and the number of the contract on the outside and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) per cent of the amount of the proposal, but not less than $ ... nor more than $200,000.00 and must be delivered at the place designated above on or before the hour named. Copies of the proposal forms to be used for submitting proposals, of the form for the proposal bond, and of the form to be used for the financial statement and for the plan and equipment statement to be submitted with the proposal, and the special addressed envelope are furnished in detached forms with the contract documents.

The Contract will be awarded or the proposals rejected within 30 days (Sundays excepted) from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

June 16, 1950

OFFICIAL PROPOSALS

Bids: July 12, 1950 (1411)

State Road Work

STATE DEPARTMENT OF PUBLIC WORKS
BUREAU OF CONTRACTS & ACCOUNTS
ALBANY, N. Y.

Sealed proposals will be received by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., until ten-thirty o'clock A.M., Advanced Standard Time, on WEDNESDAY, JULY 12, 1950, for projects in the following counties:

County	Depos. Bid Rate	deposit	Type	Miles	Engrs. estimate
Bronx	5%	$6,000	Lighting and Misc. Work	4.64	$ 20,000
Erie	50	85,000	Conc. Pav. & Misc. Work	9.65	1,545,000
Kings	25	34,000	Bit. Mac. & Misc. Work	1.57	615,000
Madison	50	125,000	Conc. Pav.	6.18	2,350,000
Monroe	10	4,500	Traffic Signal Syst.	2.40	45,000
	100	140,000	Conc. Pav. & Misc. Work	3.68	2,505,000
Nassau	50	45,000	Traffic Signal Syst. & Misc. Work	2.95	450,000
Wayne-Pa. & Ariz., N. Y.	15	30,000	Lig. Equip. & Misc. Work	0.45	60,000
Westchester	100	200,000	Conc. Pav. & Misc. Work	7.00	2,000,000
Bronx-Ulster	5%	$6,000	Lighting & Misc. Work	4.64	$ 20,000

OFFICIAL PROPOSALS

Maps, plans, specifications and estimates may be obtained at the office of the Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers in whose district the roads are located. The name and address of the District Engineers will be furnished upon application and maps may be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract to be bid on below A-Cash Bond will be made in full to bidders for letters of one set, in good condition, within 20 days of award, or rejection of bid. Refund for all other sets in good condition, similar period, will be made on deposit.

Special attention is called to Section 9 "General Information for Bidders" in the proposals, specifications and contract agreement and to the special provisions applying to projects financed with federal funds. The form for each contract bond to be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by a cash, draft or certified check payable to the Commissioner of State of New York, Comptroller of State of New York, Commissioner of Taxation and Finance, or bond as specified in the advertisement and in the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in the Instructions to Bidders. Where optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: July 26, 1950 (1501)

Force Main

Office of City Purchasing Agent
Nashville, Tennessee

Sealed bids will be received by the Purchasing Agent of the City of Nashville, Tennessee, at the office of the Purchasing Agent, until 10 AM Central Standard Time, Thursday July 20, 1950 for a 36 inch Force Main between Whitt Avenue and 9th Avenue South, together with all appurtenances according to plans and specifications which are on file in the office of the Superintendent of the Nashville Waterworks Department, Room 201, City Hall, Nashville, Tennessee, and also the office of The Chester Engineers, 250 East Park Way, Pittsburgh 12, Pennsylvania. Immediately after closing time for the receipt of bids they will be publicly opened and read aloud in the office of the Purchasing Agent, City Hall.

The successful bidder will be required to furnish a satisfactory performance bond.

All interchange is made upon the understanding of the contract documents. Copies of all contract documents, including Proposal Form, Contract Form and Specifications and Instructions to Bidders may be seen at the office of the Chester Engineers, or, by depositing Twenty-five Dollars ($25.00) for each set of document, upon request. The entire deposit will be refunded to each actual bidder and Fifteen Dollars ($15.00) will be refunded to all others who return plans and specifications in good condition within ten (10) days after opening of bids.

The right is reserved by the City of Nashville through the Mayor to reject all bids and to waive any informality in the bids received and to accept any bid which, in the opinion may be for the best interest of the city.

A certified check or bank draft, payable to the City of Nashville, in an amount equal to five per cent (5%) of the bid, must be submitted with each bid.

No bid may be withdrawn after the scheduled time for the receipt of bids.

CITY OF NASHVILLE,
TENNESSEE
E. H. SMITH
Purchasing Agent

WANTED

CONSTRUCTION ENGINEER-SUPERINTENDENT

for Contracting firm specializing in all types of sewer construction. Must know costs, and be able to lay out and supervise work. Reply, giving experience, age, date available, salary desired.

Good opportunity for an aggressive man, willing to work, and looking to the future. Bonus Participation

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Consolidated Western Steel Corp.
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REPLIES (Box No.) Address to office nearest you
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SITE PLANNER and Economist needed for Maryland's State Planning Commission. Standard Salary scale for both positions $5,760-$6,720. Merit system positions offering annual salary increases, generous vacation and sick leave, and retirement benefits. Please contact the office of the State Personnel Director, room 31, Light and Baltimore, Maryland for complete information concerning these positions.

POSITIONS VACANT

WANTED: HEAVY Construction Estimator. Large Midwest contractor interested in the future work desires services of an experienced estimator that will contribute new ideas and methods to estimate heavy work of all types. Send experience, age, references and salary expected in first letter. Write P-5011, Engineering News-Record.

CONTRACTOR'S ENGINEER. Large diversified heavy highway and bridge contractor has permanent position for engineer with 5 to 10 years' experience in estimating and job management. Knowledge of bituminous construction desirable. Excellent opportunity with expanding company. Write P-5011, Engineering News-Record.

WANTED: HEAVY Construction Superintendent. Familiar with piling and marine construction. Bridge, Dam, Industrial Plants. Steady work. Write P-5011, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT. Experienced in concrete construction. Permanent position with good salary. Write P-5011, Engineering News-Record.

WANTED: STRUCTURAL DRAFTSMAN. Experienced in bridge and building work. Permanent position with good salary. Write P-5011, Engineering News-Record.

STRUCTURAL ENGINEER. Experienced in design of steel and concrete bridges and buildings. Permanent position with good salary. Write P-5011, Engineering News-Record.

WANTED: STRUCTURAL DRAFTSMAN. Experienced in bridge and building work. Permanent position with good salary. Write P-5011, Engineering News-Record.

WANTED: ESTIMATOR. Experienced in bridge and building work. Permanent position with good salary. Write P-5011, Engineering News-Record.

ESTIMATOR. Experienced in bridge and building work. Permanent position with good salary. Write P-5011, Engineering News-Record.

ESTIMATOR—EXPEDITOR

Civil Engineer wanted by established Central Ohio General Contractor specializing in Commercial, Industrial and Public Works buildings.

Must have experience with same type of Contractor.

UNUSUAL OPPORTUNITY FOR ADVANCEMENT

Write giving full particulars of qualifications, age, detailed experiences, salary expected, first letter.

P-5013, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

GRAVEL PLANT SUPERINTENDENT

Wanted for operating and managing portable and permanent plants in Indiana and Michigan. State experience, references and salary.

P-5006, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS VACANT

CONSTRUCTION COMPANY, operating nationwide, specializing in structural concrete, such as bridges, docks and the like, finishing and grading, requires A No. 1 foreman, capable of handling crews of 50 men or more, and experienced in concrete construction. Must be capable of preparing complete estimates and of assuming responsibility for layout and supervision of work. Permanent position with good salary. Complete information must be furnished. Our organization has been advised of this advertisement. P-5024, Engineering News-Record.

STRUCTURAL DETAILER. Steady. To call on customers' fab. and erection shops in Bergen, Passaic, Hudson, Union & Essex Counties, N. J.

CONSTRUCTION SUPERINTENDENT. Experienced Highway Bridge Concrete Deck Construction. Must know work. Write in detail. Job near New York. Permanent job for right man. P-5005, Engineering News-Record.

DETAILERS WANTED. Potential two years' work in structural field available for experienced detailers. Reply, Engineering News-Record, RW-5004.

CONSTRUCTION MGR. Steel Shop. Exp. in fabrication of shop steel for bridges, buildings, etc. Write P-5010, Engineering News-Record.

GENERAL SUPERINTENDENT. 25 years old, experienced in Dock Building, Concrete Piling, Bridges, Buildings, Sewers, Tunnels, available June 15. Will go anywhere. Married, no children. Write P-5002, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT. Experienced in concrete sewer and bridge construction. Must be capable of handling men and equipment. Permanent position with good salary. Write P-5012

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AVAILABLE FOR QUICK DELIVERY

CRANES, SHOVELS, HOES

BUCYRUS ERIE TD-9 DOZER SHOVEL, extra blade. Good condition.

HOUGH MODEL HLD PAYLOADER, hyd. bucket control and backfiller blade. Mfd. in 1947. Excellent condition.

HOUGH MODEL HLD PAYLOADER, w gravity dump bucket. Mfd. in 1946. Good condition.

HOUGH MODEL HLA PAYLOADER, 62" hyd. bucket control. Mfd. in 1947.

LORAIN L-41 SHOVEL, powered by GMC Diesel engine with circulatory heater, elec. starter, mtd. on crawlers. Mfd. in 1948. New guarantee.

P & H MODEL 600, 1¼ YD. CRAWLER SHOVEL, pow. by gas. engine.

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CATERPILLAR RD-8 with LaPlante Choate hydraulic bulldozer. Rebuilt.

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A-C MODEL HD-7 TRACTOR, 63" tread, 18" shoes, hyd. oper. Gar Wood bulldozer, starter, canopy top. Mfd. in 1947. Good condition.

I-H TD-6 DIESEL CRAWLER TRACTOR, 50" tread, B-E hyd. bulldozer. Mfg. in 1949. Excellent condition.

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REX 16S END DISCH. CONCRETE MIXER, with power loader, water tank, 4 cyl. Wisc. air-cooled engine, mtd. on 4 pneu. tired wheels. Mfd. in 1948. Excellent condition.

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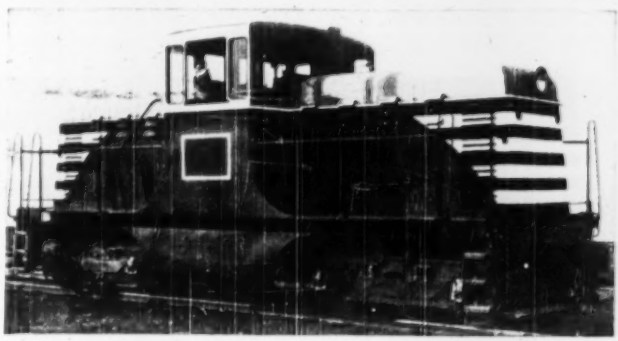

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1—1936 Model D 6 Caterpillar Tractor with Hydraulic Bulldozer—excellent condition $3,000.00
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30 ton electric gantry cranes
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6 yd. page dragline, walker, diesel power.
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120 Ton per hr., 80 batches per hr. Asphalt Plant

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CAT. PLAN. D-7 on LT. ser. fully rebuilt w/new tracks, hydro. dozer, etc.
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LORAIN 30 Diesel 1½ cy. Shovel
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INSLEY mdl. K Truck Crane, 28' boom

BENDIX MACHINERY CO., INC.
[illegible]

FOR SALE

1—1½ Cu. Yd. Amsco Shovel bucket, new, complete with teeth and sheave for P & H Shovel. Price $1450.00

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Quantity	O.D.	Wall	Construction
1,500	20"	.593"	Seamless
1,800	16"	.500"	Seamless
2,300	18"	.500"	Seamless
1,600	20"	.593"	Seamless
1,100	24"	.687"	Seamless
2,000	24"	.500"	Electricweld
130,000	6 5/8"	.250"	Electricweld
4,300	20"	.281"	Seamless
1,000	20"	.312"	Seamless
700	20"	.390"	Seamless
7,500	16"	.312"	SMLS. (limited service)
15,000	26"	.281"	Electricweld (rejects)

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2,000	16" OD X .312" Wall		59.3
3,000	18" OD X .281" Wall		53
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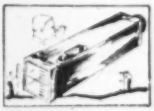

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CAPACITY: Two [illegible]
GOVERNOR: Variable speed, regulation [illegible]
LUBRICATION: Forced feed [illegible]
TRANSFER CASE: Low and high speed [illegible]
TRANSMISSION: Sliding gear, 3 speeds forward and 1 reverse
TRANSMISSION SPEEDS: 3 speeds forward, [illegible] to 1; 2.64 mph [illegible]
POWER TAKE-OFF: Belt pulley at rear with 8 speeds forward and reverse
BRAKES: Individual clutch type
TIRES: Front 5.50 x 16, Rear 9 x 24
EQUIPMENT: Single plate drive type [illegible] cooling system, oil bath air cleaner, [illegible] shaft, transfer case, oil filter, generator, starter, carburetor, hydraulic seat, [illegible] front and rear, oil bath air cleaner, differential
FINAL DRIVE: Roller chain in sealed case
WEIGHT: About 2400 lbs.
OVERALL DIMENSIONS: 122" long, 61" wide, Wheelbase 24 3/4"

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[illegible] $3,000.00

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[illegible] $12,000.00

[illegible] $800.00

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[illegible] $1250.00

[illegible] $17,500.00

[illegible] $3,000.00

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Wagnermobile Duo-Way Scoop Has Hydraulic Track and Dozer Blade

Full hydraulic controls in Wagnermobile Duo-Way Scoop permit fast and smooth action. The Duo-Way performs as a loader, dozer, truck, and tractor. It has an 84-in. dozer blade at one end, and a 1-yd scoop at the other. Side-saddle seating arrangement provides unobstructed visibility for operations at either end. Powered by a 114-hp engine, it has four speeds in either direction, and highway speeds to 20 mph. Tilt control mechanism tilts 10 deg. back or forward. Top section folds down to 9 ft 6 in. for low road clearance.—Mixermobile Manufacturers, Portland 20, Ore.

Heavy-Duty Lift Trucks

New series of heavy-duty Lifttrucks is available in three capacities—5, 7½ and 10 tons. Dual pneumatic-traction tires are mounted on a dead axle that supports the chassis and axle load, relieving the differential drive from this stress. Lifting guides are interlocked to provide good alignment and equal distribution of fork loads. Attachments available include shovels, special forks and fork extensions, power spreaders, rotary booms for forks, and speed winches and crane booms.—Silent Hoist & Crane Co., 841 63rd St., Brooklyn 20, N. Y.

Airborne Surveyor's Target

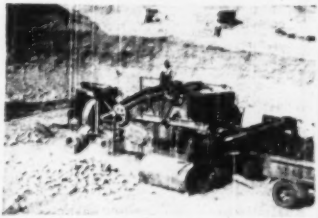
Balloon combined with kite provides a means for lifting and suspending surveyors' targets at heights to 2,000 ft. This facilitates surveying operations in mountainous terrain and other areas obscured by trees or man-made structures. In aerial mapping, the Ketoon can be used to establish horizontal tie points on the ground. Results with the Ketoon have been found to be accurate and acceptable for third-order work. The balloon is filled with helium or hydrogen.—Dewey & Almy Chemical Co., Cambridge, Mass.

Steel Window Well

Fully corrugated galvanized-steel window well has a flat, crimped, safety-top edge. The USF standard well is produced in only one opening width, but in three standard depths. Dimensions of the Standard wells are: 37x16 in., in a choice of 12, 18, and 24-in. depths.—United Steel Fabricators, Inc., Wooster, Ohio.

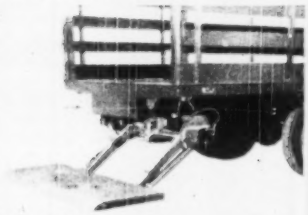
Reversible Rooter Points

Forged rooter point fits all small trenchers. The Model 51 point is 42-in. long and has a Rockwell C 48/51 hardness. The point resembles a cape chisel with heavy ribs on each side, providing a strong, shallow cutting face.—Jiffy Products Co., Inc., 3611 Parry Ave., Dallas, Tex.



Small Model Gravelmaster

Junior B is the smallest unit in the 880 Gravelmaster series of crushing, screening, and loading plants. Overall height has been lowered and screening area increased with a 2x8-ft, 2-deck screen. Provision is made for removal of chips. A 10x16-in. roller-bearing jaw crusher and an 18x16-in. staggear roll crusher is used in the Junior B. Power is mounted on the plant. Plant may be fed by shovel-loading hopper, or by a swivel feed conveyor. The Junior B meets road limitations.—Universal Engineering Corp., Div. Pettibone Mulliken Corp., Cedar Rapids, Iowa.



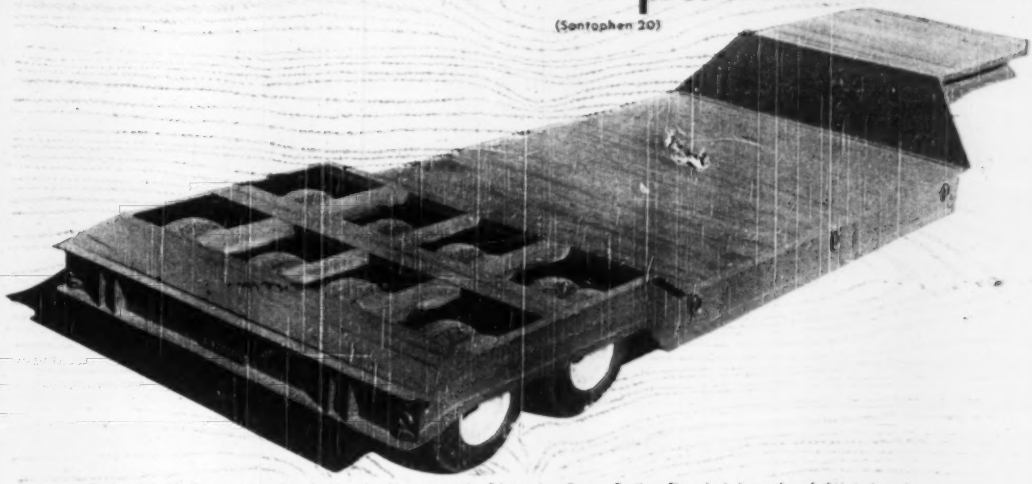
Elevating Tailgate

Hydraulically controlled elevating tailgate is operated by a single lever. Hydrogate lowers to within a few in.

(Continued on page 86)

Pachyderm of trailers protected by Monsanto PENTA CHLOROPHENOL preservative

(Santophen 20)



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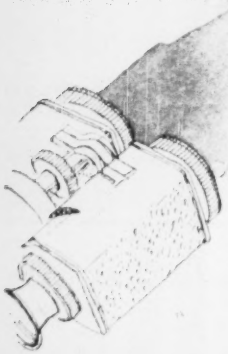

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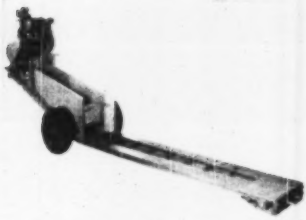
ches of the ground, and stops or holds at any height desired. Marion safety features prevent tailgate from dropping accidentally. Rated lifting capacity is 2,000 lb. Unit fits all new and old model trucks.—Marion Metal Products Co., Marion, Ohio.

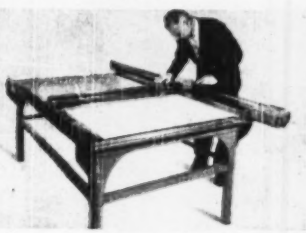


Hopper-Car Unloader

Belt-type unloader conveys stone, sand, and gravel from hopper cars onto a portable belt conveyor for stockpiling or transfer to trucks. Adjustable gate at forward end of chute controls height of flow. Rubber strip along each side prevents materials from leaking into the chain or other wearing parts. Pneumatic tires or steel wheels are available, as are gasoline or electric power units.—Lippmann Engineering Works, 4603 W. Mitchell St., Milwaukee 14, Wis.

Hydraulic Jacks

Complete line of hydraulic jacks covers a size range from 1½ to 100 tons. All models can be used in vertical or horizontal position. Jack handles must be removed from pump socket in order to open release valve. Bases are ribbed to obtain firm ground bearing.—Star Jack Co., Inc., Elmwood Park, Chicago 35, Ill.



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gible accumulated error. Large scale movements are made by disengaging latch. Intermediate adjustments to 0.001 in. are made by two hand cranks. —The Fairchild Camera & Instrument Corp., West Coast Division, 53 W. Union St., Pasadena 1, Calif.

Power Saw and File

Metals, wood, plastics, and other materials up to the size of a 36-in. I-beam can be quickly cut by the Mid-States Saw Gun. Power is provided by electric drill, air drill, or through a flexible shaft. The Saw Gun handles standard types of hack-saw blades and files. Units are supplied with or without drills, and in models to connect with various size drill chucks or flexible shafts. — Mid-States Welder Mfg. Co., 6025 S. Ashland Ave., Chicago 36, Ill.

Fuel-Pump Calibrating Stand

Repairs and adjustments of diesel-fuel injection pumps are speeded by the Model MP-3200 calibrating stand. Adjustable to all makes of pumps, the stand is a self-contained unit for calibrating, testing, and adjusting fuel pumps. — Automotive Products, Inc., 1700 S. E. Grand Ave., Portland 14, Ore.

Side-Dump Truck Body

Hydraulic dumping and fully automatic down-folding side gate are features of the new Easton side-dump truck body. Operation of gate is controlled by leverage system with door-operating mechanism completely enclosed for protection against falling stones. Gate opens flush with floor as body is raised, closes automatically as body is lowered. When open, gate provides a chute that carries load clear of tires. Three-sleeve telescoping hydraulic jacks, one at each end of body, are used for dumping. The Model

(Continued on next page)

566-ft. bridge across Smith River in Douglas County, Oregon. Truss section fabricated by Timber Structures, Inc.

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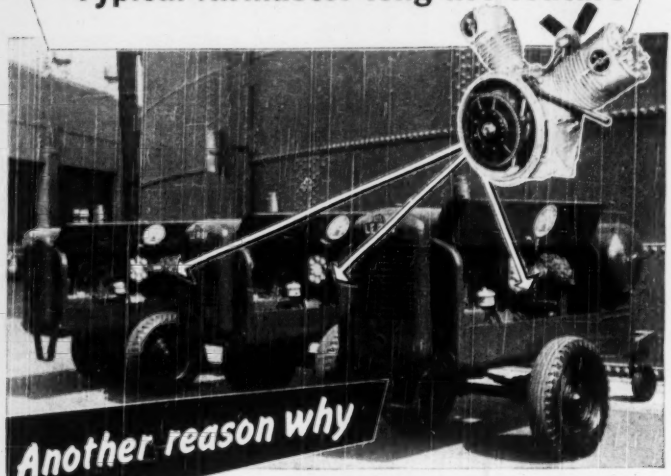

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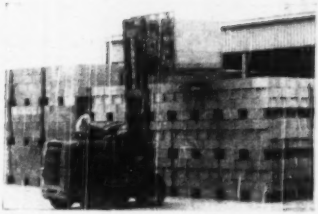
BD-11T6H (shown in illustration) has a capacity of 16 tons. The same design is available in larger capacities.—EASTON CAR & CONSTRUCTION CO., Easton, Pa.

Portable Road Beacon

Short-duration flashes are produced at a rate of 70 per min. by a new, portable road beacon. The beacon consists of a special gas-discharge lamp, simplified pulse-producing unit, four 1.5-v. dry-cell batteries, and lens. Lens drum of pressed glass protects lamp and provides increased light in horizontal direction. Beacon stands 22 in. tall, has an 8-in. dia. and weighs 29 lb.—INTERNATIONAL STANDARD TRADING CORP., 67 Broad St., New York 4, N. Y.



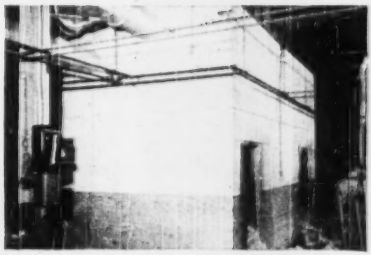
Concrete-Block Lift Truck

Prongs of the No. 333 lift truck are spaced to handle two 16-in. stretcher courses. Especially designed for handling concrete blocks, this 3-prong truck is completely automatic. Stretcher course is held in place by grippers which are forced against the blocks by the weight of the load.—SCHMIDGALL MFG. CO., Peoria, Ill.

Diesel-Engine Crankcase Oil

Improved crankcase oil for diesel and gasoline engines combats formation of sludge and engine deposits under severe operating conditions. Advantages claimed are: Prevents ring sticking, valve and rocker-arm deposits,

(Continued on page 90)



Two of several wool bins in the Hardwick and Magee Spinning Mill—built with K&M APAC.

ON GUARD: K&M "Century" APAC

When raw wool or processed wool is stored in bulk, there's danger of fire—not only from external causes, but also from spontaneous combustion. That's one of the reasons the Hardwick and Magee Company, nationally known carpet and rug manufacturers, chose K&M APAC for the construction of these wool bins in their modern spinning mill.

K&M APAC—specially processed sheets of asbestos-cement—resists fire effectively and dependably. The smooth, hard finish of APAC prevents fibrous matter and dust from adhering to the surface—reduces materially the opportunity for fire to spread. And K&M APAC stops the other enemies of raw materials, also—weather, rust, rot, termites, and rodents can't affect it.

You'll like the installation economies you get from using K&M APAC, too. Sheet sections are large (4' x 8') and strong, but not bulky; they handle easily, can be cut and fitted on the job, are quickly erected. And you save on maintenance costs, too, for K&M APAC doesn't need even paint to preserve its attractive finish.

It will pay you to consider K&M APAC Asbestos-Cement Sheets for such needs as panels, partitions, sheathing, shaft casings, bins, in fact, for all flat surfaces both interior and exterior. APAC can be applied over insulation boards, wood studs, solid wood sheathing, steel or wood girts. It's adaptable and economical—the perfect answer to flat surface covering problems.

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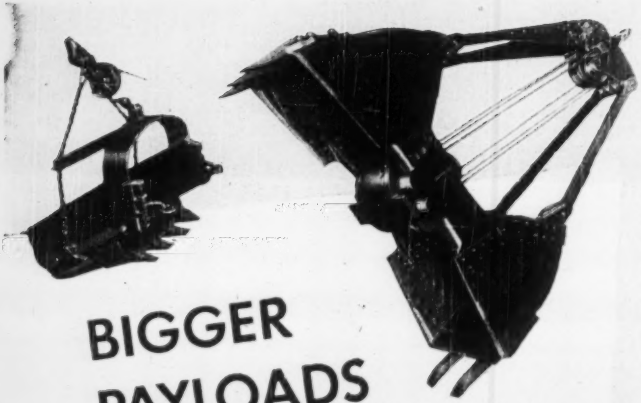

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and excessive liner wear when high-sulphur fuels are used; prevents cold engine sludge in stop-and-go operations; and prevents rust and moisture corrosion in engines that are idle or in storage.—D-A Lubricant Co., Inc., Indianapolis, Ind.

Hand-Size Hydraulic Cutter

Small-size hydraulic cutter handles reinforcing rod, stainless steel, and Monel rod of ¼-in. dia, mild-steel rod of 1-in. dia, 1-in. soft cable, and ¾-in. hard chain. Cutting unit of the Mayo Guillotine Model 20-D has an open C-frame anvil that will accommodate hex-shaped and square material. Air-hydraulic pump operates on compressed air supplying 100-lb. pressure.—Mayo Mfg. Co., Bradley, Ill.

Lightweight Power Saw

Three inch capacity saw rips, cross-cuts, and angle cuts rough or finished lumber. Weighing 12 lb. either right or left-hand blade is available. Bevel-depth attachment permits straight cuts from ¼ to 2⅜ in., and up to 45-deg bevel cuts from ¼ to 1⅞ in. Attachments are available for grooving mortar joints, cutting plastics and metal, and for notching, cutting, or scoring compositions, tile, stone, and concrete. Both 115- and 230-volt ac-dc models are available.—Mall Tool Co., Power Tool Div., 7750 S. Chicago Ave., Chicago 19, Ill.

New Product Briefs

Air-conditioning compressors meet application needs from 100 to 150 hp in single units, and are designed to operate with a variety of refrigerants. The Model 5J40 is a 4-cyl machine; the 5J60, a 6-cyl unit. Maker: Carrier Corp., Syracuse, N. Y.

Spray gun has controllable nozzle producing pattern from size of a silver dollar to a swath 12 in. wide. Maker: Eclipse Air Brush Co., Newark 7, N. J.

Corrosion and oxidation-resistant coating can be used on concrete, wood, or fiber surfaces. End-O-Rust, (End-O-Rust, Inc., Cleveland, Ohio) has a high, hard gloss finish, impervious to abrasion, weathering, and hard wear.

Electric-hydraulic door opener handles heavy doors with a feather-like touch. The Pittomatic is essentially a double-acting automatic power hinge. Micro-switch is actuated the moment the door handle is touched. Maker: Pittsburgh Plate Glass Co., Pittsburgh 22, Pa.

Pax-all refuse collector, formerly manufactured by Woodson Products of Detroit, has been acquired by the St. Paul Division of Gar Wood Industries, Inc.

Headrest goggle for welders is easily adjustable to any head size. Designed to be worn over eyes of personal glasses, the goggles have well-ventilated indirect side shields to keep out sparks, metal splashes, and stray light rays. Maker: American Optical Co., Southbridge, Mass.

Light-directing glass block transmits more daylight under conditions usually considered adverse. Insulux 563 is described as a light directing azimuth-correcting block that directs a major portion of daylight toward ceiling area. Maker: American Structural Products Co., Toledo 1, Ohio.

Gear-type bender features full 180-deg bends and positioning at any point on the tubing without disassembly. The bender, Imperial Brass Mfg. Co., Chicago 7, Ill., is designed for use with copper, brass, aluminum, or steel tubing in sizes from ¼ to 1¼ in. outside dia.

Magnetic sweeper retrieves ferrous materials on a magnetic tube which rotates through a full 360-deg. Material collects over the entire circumference to a thickness of about 2 in. Available in sizes ranging from 12 to 36 in. Maker: Eriez Mfg. Co., Erie, Pa.

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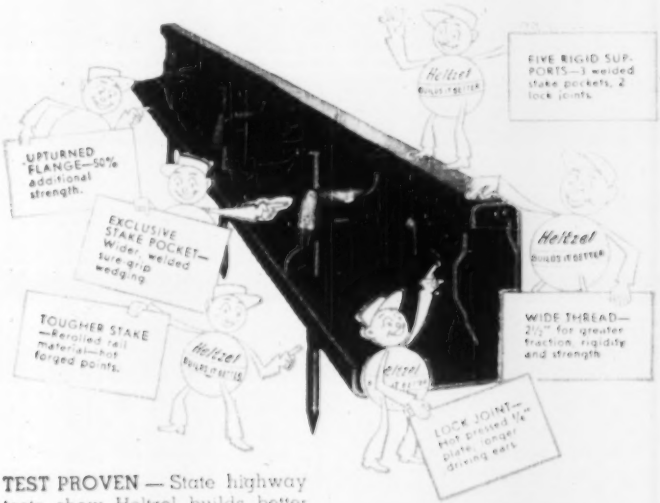
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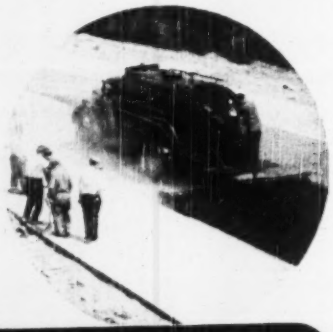

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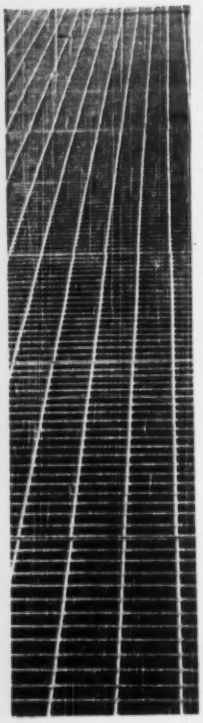

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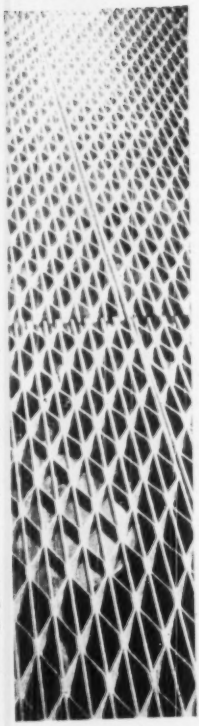

Manufacturers' Publications

Street Sweeper—Features of the improved Elgin SI street sweeper are listed and described in this folder. These features include the five forward speed transmission, 3-yd Hippo-Hopper, 3-wheel design, 7½ ft sweeping width, and gutter vision controls. Photographs and text describe operation of the Elgin SI, and a table of specifications list information on principal component parts.—THE ELGIN CORP., 501 FIFTH AVE., NEW YORK 17, N. Y.

Elevated Water Tank—The Watersphere streamlined, elevated water tank is described in this 8-page. The pamphlet describes construction of the Watersphere, supports, location of accessories, and other features of construction and operation. The pamphlet contains illustrations of typical installations from 25,000 to 150,000 gal capacity. Standard sizes are available with capacities to 250,000 gal.—CHICAGO BRIDGE & IRON CO., 332 S. MICHIGAN AVE., CHICAGO 4, ILL.

Compressed Air—Basic reference data on compressed air is contained in this 18-p booklet. Designed as a general non-technical review of compressed-air theory, it outlines how air is compressed, machines employed in compressing air, and basic principles of utilization of air power.—COMPRESSED AIR & GAS INSTITUTE, 1410 TERMINAL TOWER, CLEVELAND 13, OHIO.

Calgon—Folder describes and illustrates threshold treatment for protecting water systems against general corrosive attack, eliminate red water, and control corrosion of hot water systems and industrial cooling systems. The folder points out that Calgon forms a film over metal surfaces of the water system, which acts as a protective coating.—CALGON, INC., HAGAN BLDG., PITTSBURGH 30, PA.

Metal Drainage Structures—Three new bulletins released by Armco describe various types of metal drainage structures. One bulletin, 24 pp in length, describes the primary advantages of perforated pipe and gives recommended installation methods. It also describes the advantages of controlling ground water. The second bulletin describes Armco end sections designed to provide increased culvert efficiency to match modern road de-

sign; and to provide simple, speedy installation. The third bulletin describes strength advantages of Armco metal drainage structures. A listing outlines types suitable for various installations and kinds of service. — ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Air Distribution Outlets—Ceiling air-distribution outlets are described in Catalog I-4085. The catalog contains complete dimension and capacity information for each type of Ventmiflo outlet. — BARBER-COLMAN CO., ROCKFORD, ILL.

Sectional-Truss Belt Conveyor—Selection and layout information of sectional-truss belt conveyors is interestingly presented in a new 40-p catalog. The "Redi-Fab" series described is available in 49 lengths, 3 widths, and with numerous other variables and accessories. A feature of the catalog is a layout sheet which, coupled with the engineering data presented, permits the reader to make his own layout right down to the location and selection of supports. — BARBER-GREENE CO., AURORA, ILL.

Full-Track Trench Excavator—Specifications and operating advantages of the Badger Model 303-3 full-track trench excavator are listed in a 4-p folder. Among the features described in detail are the patented Badger shovel and cleapers, the arc-type reversible cross conveyor, deeper digging range and grade holder and sight. Photographs show recommended applications.—BADGER MACHINE CO., WINONA, MINN.

Welding Materials—Two catalogs now available contain detailed information on a line of welding electrodes and accessories. One bulletin (16 pp) contains two pages of data on each of seven Murex mild-steel arc-welding electrodes. The other bulletin (32 pp) describes the M&T line of arc-welding accessories which includes holders, helmets, cable, ground clamps, goggles, cleaning tools, and protective clothing.—METAL & THERMIT CORP., 120 E. 42ND ST., NEW YORK 17, N. Y.

Water Clarifiers, Softeners—Bulletin describes the Graver water clarifiers and cold-process softeners. Feature of the bulletin is a graphic description of design, operation, and features of the Graver reactivator. Explanations in tabular form provide greater clarity. Introductory sections explain principles and chemistry of cold-process water treatment.—GRAVER WATER CONDITIONING CO., DEPT. 163, 216 W. 14TH ST., NEW YORK 11, N. Y.

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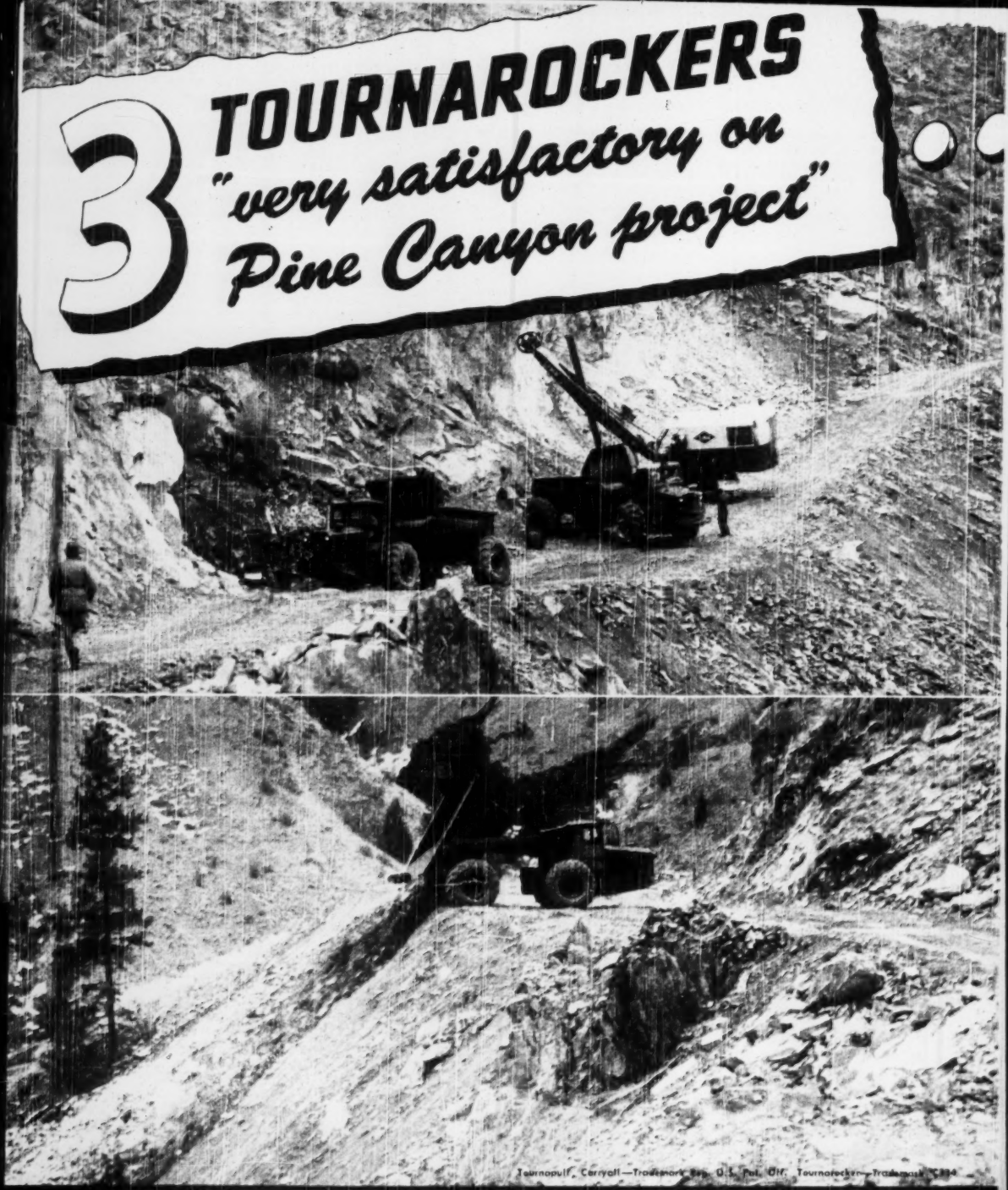

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tackled one of the northwest's toughest highway jobs . . . relocating 4.4 miles of U. S. 2 along steep sidewalls of rocky Pine Canyon, near Wenatchee, Washington. With over 600,000 yards of shovel rock to be carved out of the cliff face, some of the material is side-cast . . . much of it has to be hauled and dumped along the mountainside trail to widen narrow sections. Goodfellow Brothers, Inc., assigned the most difficult hauling to 3 LeTourneau 16-ton, rear-dump Tournarockers . . . and according to James B. Goodfellow "They are working out *very* satisfactorily".

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Loading under a 2-yard rock shovel, the Tournarockers carry 9 to 11 bank yards each trip. On one 2800-foot, one-way haul, actual job records show that Tournarockers easily handle shovel production of 1000 yds. every 8-hour shift. This rate of production, day in, day out, helps keep the job on schedule in spite of the rough haul roads, steep grades, and confined hauling conditions at altitudes of 2000 feet.

13' 9" turn radius speeds handling

Short, 90° turns, and positive electric steer by push-button control, permit easy turning and spotting anywhere along the narrow trail for load and dump position. Oversize, disc-type air brakes on all 4 wheels (4176 sq. in. total braking surface) give operators complete safety throughout the hauling cycle. Positive holding action of 4-wheel brakes . . . plus front-wheel drive on 186 h.p. Tournapull prime mover . . . let the Tournarockers dump safely out over the edge of mountainside fills. Simple electric hoist raises body to vertical position . . . streamlined bowl clears loads instantly.

Important savings for you

These same revolutionary Tournarocker advantages that are helping Goodfellow Brothers, Inc., lick steep slopes and rough going on the Pine Canyon project offer new low-hauling costs for your jobs, too. Ask your LeTourneau Distributor about this 16-ton, rear-dump Tournarocker. He can also give you complete information on 9-ton and 35-ton Tournarockers . . . and will show you money-saving interchangeability with Carryall Scrapers, bottom-dump hoppers, cranes, flat-beds and other auxiliary hauled units. Your investment dollar provides steady year-round earnings with interchangeable auxiliary units at approximately 25% of the cost of the original unit. Write or call NOW!

Big target . . . Operator on Goodfellow Brothers' 2-yard shovel has large target with Tournarocker's 12' 5" x 8' top opening . . . speeds shovel swings, has less spillage.

Rock body . . . Here's a typical load of big-chunk rock carried by Tournarockers along Pine Canyon's slopes. 186 h.p. for 16-ton capacity licks the toughest hauling conditions.

90 turns with positive power steer . . . Short 13' 9" turning radius is an important advantage where operators have to turn and dump their loads along these narrow trails.

Front-wheel drive . . . Means you can keep the drivewheels of the prime mover on firm ground. Front or rear wheel air brakes can be set independently.

LETOURNEAU PEORIA, ILLINOIS **TOURNAROCKERS**

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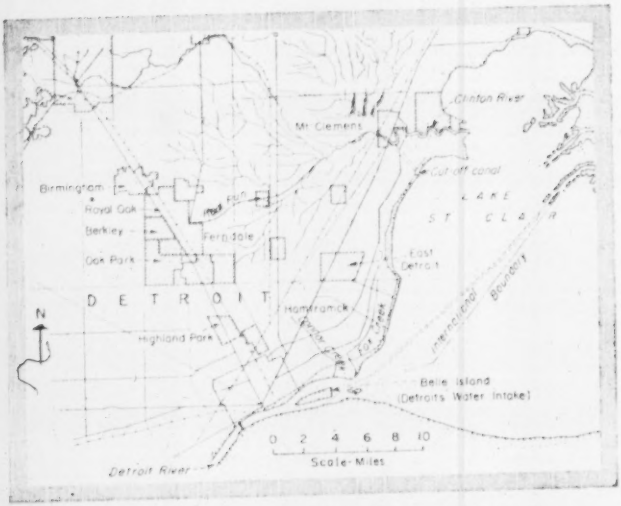


Detroit's stream-pollution problem

Stream and river pollution in and around Detroit—a controversial issue for several years—threatens to worsen unless quicker, stronger measures are taken.

There are many offenders. Detroit's water supply, from Lake St. Clair, is threatened by communities and industrial plants discharging untreated or inadequately treated sewage into the lake. In turn, pollution from Detroit and adjacent communities contaminates the lower Detroit River.

But considerable progress in pollution abatement has been made in the past two years. It's due to joint efforts of federal, state and municipal sanitary engineers, plus some cooperation from industry.

Detroit's problem of maintaining a safe supply of water and reducing its stream pollution seem largely due to the enormous population involved; but these same problems are no less vital to some outlying communities.

• Storm water relief—One of Detroit's current headaches is to provide storm-water relief sewers, and still comply with health and water pollution laws. Crux of the problem is that the state's water-pollution law, amended last year to create a Water Resources Commission, gives broad powers for . . . "regulating and restricting the pollution content of any waste material or polluting substance discharged into any lake, river or stream of the state".

It is virtually impossible for Detroit to meet pollution regulations since its major sewers are of the combined type. Dry-weather flow is treated, but during heavy rains, the combined sewage and surface run-off is discharged untreated.

Cost of treating all of Detroit's combined flood water and sewage would be prohibitive. Estimates range upward of $200 million, and it would take several years to construct adequate treatment plant facilities. On the other hand, it would cost $150 million or more to extend the city's present intake line to Lake Huron.

The present sewage-treatment plant won state approval when it was completed 10 years ago. It's primary sedimentation process and chlorination of effluent has helped river pollution tremendously. It now appears, however, that a higher type treatment is desired by state authorities, although no nuisance has been attributed to the effluent.

Detroit obtained permission recently to build a huge sewer and pumping station which will divert combined sewer overflows from Fox Creek to Conner Creek. But the city will be required to clean up the pollution in Conner Creek caused by the Fox Creek diversion, as well as the combined sewer overflows already discharging into Conner Creek.

• Flood relief—Two projects now under construction by the Corps of Engineers are first steps in a $2,000,000 program to give flood relief to several communities in the area, the largest, Royal Oak. One project is a 2-mi. $370,000 cut-off canal opening off the Clinton River and extending southward to Lake St. Clair. Started early last year under the direction of Col. Louis J. Runnagg, until recently, Detroit District Engineer, it will help alleviate floods in the lower Clinton River. It may, however, aggravate pollution at Mt. Clemens' water intake and at a large public bathing beach.

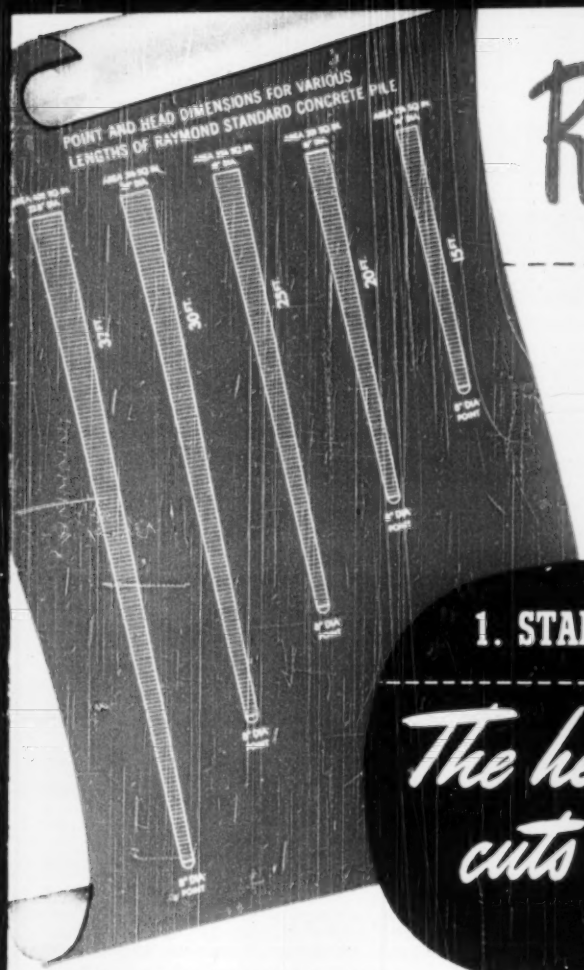
The second, started last month under Lt. Col. John D. Bristor, new district engineer at Detroit, involves deepening and widening 12 miles of Red Run, a tributary of the Clinton River. Both should be completed by July, 1951.

Detroit isn't alone in its stream-pollution troubles. Several smaller communities all the way from Port Huron to the mouth of the Detroit River face similar problems. Some have taken definite steps to abate their pollution; others are unable to raise funds; some still "plan."

Mt. Clemens is building a $2,000,000 sewage-treatment plant to keep from polluting Clinton River as well as its own water supply. And several industrial firms already are taking steps to treat their wastes. Port Huron is starting construction of its sewage-treatment facilities, but must raise additional funds to complete its interceptors.

• An international problem—The International Joint Commission under the chairmanship of A. O. Stanley, of the U. S. Section, also is deeply concerned with stream-pollution abatement in the area. (It administers a treaty forbidding pollution of Canadian-American waters.) Although the commission has no enforcement powers, it can be expected to report strong recommendations to Congress should pollution become intolerable.

• Tentative standards—One of the latest proposals is a tentative set of standards for the quality of water based on the purpose of its usage. These standards, now under consideration by the Detroit Regional Planning Commission, deal with seven uses of water. They are domestic consumption, industrial processing water, cooling water for industry, bathing, recreational and boating, fishing and hunting, and wild life.



Raymond MAKES 5 TYPES OF CONCRETE PILES

1. STANDARD
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3. PIPE STEP-TAPER
4. COMPOSITE
5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements.

1. STANDARD PILES

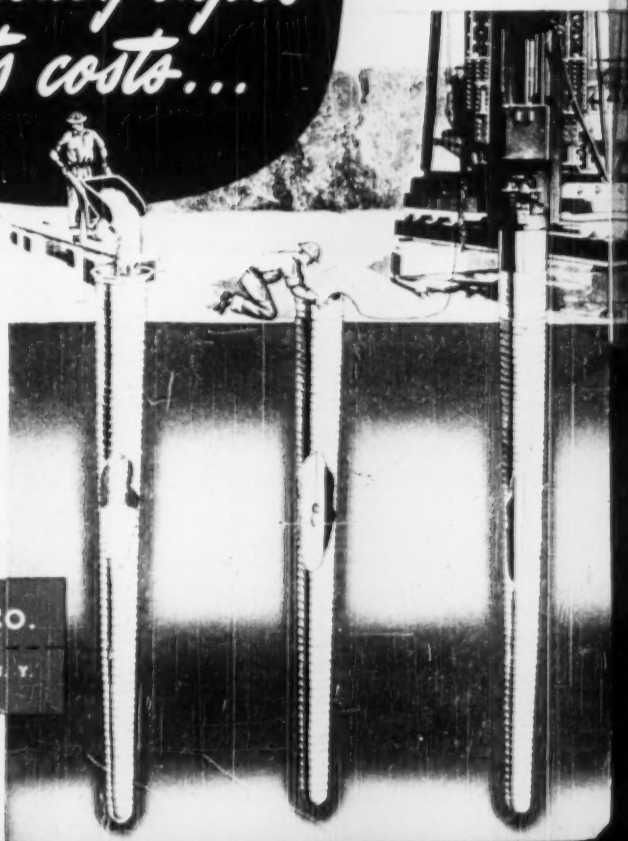
The heavy taper cuts costs...

Note that the permanent steel shell maintains the soil pressure developed during driving and while the concrete is setting, thus insuring a perfect pile free from distortion with a high load carrying capacity.

Raymond Standard Concrete Piles have a heavy, uniformly tapered permanent steel shell. On friction piles, this taper acts like a wedge, giving these specific advantages:

1. Driving resistance is maintained.
2. The load is transmitted to the soil through the entire length of the pile.
3. The load can be carried by shorter piles, because of their greater carrying capacity.
4. Since shorter piles cost less to drive, the taper usually results in substantial savings.

Each of these statements has been tested and proved innumerable times. The evidence is at your disposal at any of our offices. Your inquiry is cordially invited.



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